2_fei_savings_rate

August 8, 2022

1 Experiment Notebook: FEI Savings Rate Analyses

2 Table of Contents

3 Experiment Summary

The purpose of this notebook is to assess the impact that various settings of the FEI Savings Rate process have on User FEI Capital Allocation across Liquidity Pool, Money Market, and FEI Savings Deposits.

4 Experiment Assumptions

See assumptions document for further details.

5 Experiment Setup

We begin with several experiment-notebook-level preparatory setup operations:

- Import relevant dependencies
- Import relevant experiment templates
- Create copies of experiments
- Configure and customize experiments

Analysis-specific setup operations are handled in their respective notebook sections.

6 Analysis Context

The goal of analysis notebooks is to be able to related the results of the FEI ecosystem model to the existing state of governance of the FEI protocol and ecosystem. To do this, we attempt to leverage the large scale simulation output capabilities of the radCAD framework to produce FIP-relevant qualitative and probabilistic conclusions, such that they may loosely aid in the conceptual phase of protocol decision support.

7 Analysis 1: Effect of FEI Savings Rate on User FEI Capital Allocation

In this analysis we aim to explore FEI ecosystem model output in terms of movements of User FEI amongst idle and yield bearing deposits, and look at the sustainability of budgeting of various levels of the FEI savings rate in relation to protocol revenue.

7.0.1 Relevant FIPs for the Analysis

- FIP-73 (Contractionary Monetary Policy)
- FIP-103 (Creation of the FEI Savings Rate)
- FIP-105 (Volt)

7.0.2 Analysis Sections

- 0. Parameter sweeps for the analysis

- 1. CAM Weights and Deposit Allocation Proportions

  - FEI Savings Rate Setting 1
  - FEI Savings Rate Setting 2
  - FEI Savings Rate Setting 3
  - FEI Savings Rate Setting 4 (Disabled)

- 2. User Circulating FEI Deposit Evolution

  - 2.1. Total User Circulating FEI
  - 2.2. FEI Liquidity Pool Deposit
  - 2.3. FEI Money Market Deposit
  - 2.4. FEI Savings User Deposit
  - 2.5. FEI Idle User Deposit

- 3. State variables for mechanisms associated to FEI deposits

  - 3.1 FEI Money Market Dynamics
  - 3.2 FEI Liquidity Pool Dynamics
  - 3.3 FEI Savings Deposit Dynamics

- 4. Conclusion

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2022-08-08 16:05:57,222 - root - INFO - Setting up initial state
2022-08-08 16:05:57,224 - root - INFO - Setting up initial state
2022-08-08 16:05:57,227 - root - INFO - Setting up initial state
2022-08-08 16:05:57,229 - root - INFO - Setting up initial state
2022-08-08 16:05:57,232 - root - INFO - Setting up initial state
2022-08-08 16:05:57,234 - root - INFO - Setting up initial state
2022-08-08 16:05:57,238 - root - INFO - Setting up initial state
2022-08-08 16:05:57,244 - root - INFO - Setting up initial state
2022-08-08 16:05:57,246 - root - INFO - Setting up initial state
2022-08-08 16:05:57,249 - root - INFO - Setting up initial state
2022-08-08 16:05:57,251 - root - INFO - Setting up initial state
2022-08-08 16:05:57,253 - root - INFO - Setting up initial state
2022-08-08 16:05:57,256 - root - INFO - Setting up initial state
2022-08-08 16:05:57,258 - root - INFO - Setting up initial state
2022-08-08 16:05:57,262 - root - INFO - Setting up initial state
2022-08-08 16:05:57,264 - root - INFO - Setting up initial state
2022-08-08 16:05:57,267 - root - INFO - Setting up initial state
2022-08-08 16:05:57,270 - root - INFO - Setting up initial state
2022-08-08 16:05:57,273 - root - INFO - Setting up initial state
2022-08-08 16:05:57,275 - root - INFO - Setting up initial state
2022-08-08 16:05:57,277 - root - INFO - Setting up initial state
2022-08-08 16:05:57,280 - root - INFO - Setting up initial state
2022-08-08 16:05:57,282 - root - INFO - Setting up initial state
2022-08-08 16:05:57,285 - root - INFO - Setting up initial state
2022-08-08 16:05:57,287 - root - INFO - Setting up initial state
2022-08-08 16:05:57,290 - root - INFO - Setting up initial state
2022-08-08 16:05:57,293 - root - INFO - Setting up initial state
2022-08-08 16:05:57,296 - root - INFO - Setting up initial state
2022-08-08 16:05:57,298 - root - INFO - Setting up initial state
2022-08-08 16:05:57,300 - root - INFO - Setting up initial state
2022-08-08 16:05:57,303 - root - INFO - Setting up initial state
2022-08-08 16:05:57,306 - root - INFO - Setting up initial state
2022-08-08 16:05:57,308 - root - INFO - Setting up initial state
2022-08-08 16:05:57,311 - root - INFO - Setting up initial state
2022-08-08 16:05:57,313 - root - INFO - Setting up initial state
2022-08-08 16:05:57,315 - root - INFO - Setting up initial state
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2022-08-08 16:05:57,318 - root - INFO - Setting up initial state
2022-08-08 16:05:57,320 - root - INFO - Setting up initial state
2022-08-08 16:05:57,323 - root - INFO - Setting up initial state
2022-08-08 16:05:57,325 - root - INFO - Setting up initial state
2022-08-08 16:05:57,328 - root - INFO - Setting up initial state
2022-08-08 16:05:57,331 - root - INFO - Setting up initial state
2022-08-08 16:05:57,333 - root - INFO - Setting up initial state
2022-08-08 16:05:57,336 - root - INFO - Setting up initial state
2022-08-08 16:05:57,338 - root - INFO - Setting up initial state
2022-08-08 16:05:57,343 - root - INFO - Setting up initial state
2022-08-08 16:05:57,346 - root - INFO - Setting up initial state
2022-08-08 16:05:57,348 - root - INFO - Setting up initial state
2022-08-08 16:05:57,351 - root - INFO - Setting up initial state
2022-08-08 16:05:57,353 - root - INFO - Setting up initial state
2022-08-08 16:05:57,356 - root - INFO - Setting up initial state
2022-08-08 16:05:57,358 - root - INFO - Setting up initial state
2022-08-08 16:05:57,360 - root - INFO - Setting up initial state
2022-08-08 16:05:57,363 - root - INFO - Setting up initial state
2022-08-08 16:05:57,365 - root - INFO - Setting up initial state
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2022-08-08 16:05:57,371 - root - INFO - Setting up initial state
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2022-08-08 16:05:57,377 - root - INFO - Setting up initial state
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2022-08-08 16:05:57,382 - root - INFO - Setting up initial state
2022-08-08 16:05:57,385 - root - INFO - Setting up initial state
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2022-08-08 16:05:57,394 - root - INFO - Setting up initial state
2022-08-08 16:05:57,397 - root - INFO - Setting up initial state
2022-08-08 16:05:57,399 - root - INFO - Setting up initial state
2022-08-08 16:05:57,401 - root - INFO - Setting up initial state
2022-08-08 16:05:57,406 - root - INFO - Setting up initial state
2022-08-08 16:05:57,408 - root - INFO - Setting up initial state
2022-08-08 16:05:57,411 - root - INFO - Setting up initial state
2022-08-08 16:05:57,413 - root - INFO - Setting up initial state
2022-08-08 16:05:57,416 - root - INFO - Setting up initial state
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2022-08-08 16:05:57,421 - root - INFO - Setting up initial state
2022-08-08 16:05:57,424 - root - INFO - Setting up initial state
2022-08-08 16:05:57,426 - root - INFO - Setting up initial state
2022-08-08 16:05:57,429 - root - INFO - Setting up initial state
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2022-08-08 16:05:57,434 - root - INFO - Setting up initial state
2022-08-08 16:05:57,436 - root - INFO - Setting up initial state
2022-08-08 16:05:57,438 - root - INFO - Setting up initial state
2022-08-08 16:05:57,441 - root - INFO - Setting up initial state
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2022-08-08 16:05:57,451 - root - INFO - Setting up initial state
2022-08-08 16:05:57,453 - root - INFO - Setting up initial state
2022-08-08 16:05:57,483 - root - INFO - Starting simulation 0 / run 0 / subset 0
2022-08-08 16:05:57,513 - root - INFO - Starting simulation 0 / run 1 / subset 3
2022-08-08 16:05:57,535 - root - INFO - Starting simulation 0 / run 3 / subset 2
2022-08-08 16:05:57,553 - root - INFO - Starting simulation 0 / run 5 / subset 1
2022-08-08 16:05:57,587 - root - INFO - Starting simulation 0 / run 7 / subset 0
2022-08-08 16:05:57,619 - root - INFO - Starting simulation 0 / run 8 / subset 3
2022-08-08 16:05:57,685 - root - INFO - Starting simulation 0 / run 12 / subset
1
2022-08-08 16:05:57,652 - root - INFO - Starting simulation 0 / run 10 / subset
2
2022-08-08 16:05:57,707 - root - INFO - Starting simulation 0 / run 14 / subset
0
2022-08-08 16:05:57,741 - root - INFO - Starting simulation 0 / run 15 / subset
3
2022-08-08 16:05:57,765 - root - INFO - Starting simulation 0 / run 17 / subset
2
2022-08-08 16:05:57,790 - root - INFO - Starting simulation 0 / run 19 / subset
1
2022-08-08 16:05:57,814 - root - INFO - Starting simulation 0 / run 21 / subset
0
2022-08-08 16:05:57,839 - root - INFO - Starting simulation 0 / run 22 / subset
3
2022-08-08 16:05:57,870 - root - INFO - Starting simulation 0 / run 24 / subset
2
2022-08-08 16:05:59,894 - root - INFO - Starting simulation 0 / run 3 / subset 3
2022-08-08 16:05:59,931 - root - INFO - Starting simulation 0 / run 0 / subset 1
2022-08-08 16:05:59,932 - root - INFO - Starting simulation 0 / run 5 / subset 2
2022-08-08 16:05:59,934 - root - INFO - Starting simulation 0 / run 7 / subset 1
2022-08-08 16:05:59,965 - root - INFO - Starting simulation 0 / run 2 / subset 0
2022-08-08 16:06:00,023 - root - INFO - Starting simulation 0 / run 9 / subset 0
2022-08-08 16:06:00,121 - root - INFO - Starting simulation 0 / run 12 / subset
2
2022-08-08 16:06:00,183 - root - INFO - Starting simulation 0 / run 10 / subset
3
2022-08-08 16:06:00,222 - root - INFO - Starting simulation 0 / run 16 / subset
0
2022-08-08 16:06:00,223 - root - INFO - Starting simulation 0 / run 19 / subset
2
2022-08-08 16:06:00,230 - root - INFO - Starting simulation 0 / run 17 / subset
3
2022-08-08 16:06:00,235 - root - INFO - Starting simulation 0 / run 21 / subset
1
2022-08-08 16:06:00,296 - root - INFO - Starting simulation 0 / run 24 / subset
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3
2022-08-08 16:06:00,367 - root - INFO - Starting simulation 0 / run 23 / subset
0
2022-08-08 16:06:00,437 - root - INFO - Starting simulation 0 / run 14 / subset
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2022-08-08 16:06:02,272 - root - INFO - Starting simulation 0 / run 4 / subset 0
2022-08-08 16:06:02,306 - root - INFO - Starting simulation 0 / run 5 / subset 3
2022-08-08 16:06:02,314 - root - INFO - Starting simulation 0 / run 7 / subset 2
2022-08-08 16:06:02,340 - root - INFO - Starting simulation 0 / run 2 / subset 1
2022-08-08 16:06:02,365 - root - INFO - Starting simulation 0 / run 0 / subset 2
2022-08-08 16:06:02,396 - root - INFO - Starting simulation 0 / run 9 / subset 1
2022-08-08 16:06:02,508 - root - INFO - Starting simulation 0 / run 16 / subset
1
2022-08-08 16:06:02,560 - root - INFO - Starting simulation 0 / run 12 / subset
3
2022-08-08 16:06:02,599 - root - INFO - Starting simulation 0 / run 18 / subset
0
2022-08-08 16:06:02,663 - root - INFO - Starting simulation 0 / run 25 / subset
0
2022-08-08 16:06:02,675 - root - INFO - Starting simulation 0 / run 19 / subset
3
2022-08-08 16:06:02,729 - root - INFO - Starting simulation 0 / run 21 / subset
2
2022-08-08 16:06:02,738 - root - INFO - Starting simulation 0 / run 11 / subset
0
2022-08-08 16:06:02,773 - root - INFO - Starting simulation 0 / run 23 / subset
1
2022-08-08 16:06:03,137 - root - INFO - Starting simulation 0 / run 14 / subset
2
2022-08-08 16:06:04,683 - root - INFO - Starting simulation 0 / run 4 / subset 1
2022-08-08 16:06:04,708 - root - INFO - Starting simulation 0 / run 6 / subset 0
2022-08-08 16:06:04,857 - root - INFO - Starting simulation 0 / run 7 / subset 3
2022-08-08 16:06:04,890 - root - INFO - Starting simulation 0 / run 0 / subset 3
2022-08-08 16:06:04,929 - root - INFO - Starting simulation 0 / run 2 / subset 2
2022-08-08 16:06:05,115 - root - INFO - Starting simulation 0 / run 16 / subset
2
2022-08-08 16:06:05,166 - root - INFO - Starting simulation 0 / run 18 / subset
1
2022-08-08 16:06:05,198 - root - INFO - Starting simulation 0 / run 20 / subset
0
2022-08-08 16:06:05,207 - root - INFO - Starting simulation 0 / run 13 / subset
0
2022-08-08 16:06:05,211 - root - INFO - Starting simulation 0 / run 25 / subset
1
2022-08-08 16:06:05,215 - root - INFO - Starting simulation 0 / run 9 / subset 2
2022-08-08 16:06:05,229 - root - INFO - Starting simulation 0 / run 21 / subset
3
2022-08-08 16:06:05,289 - root - INFO - Starting simulation 0 / run 23 / subset

2

2022-08-08 16:06:05,310 - root - INFO - Starting simulation 0 / run 11 / subset 1

2022-08-08 16:06:05,544 - root - INFO - Starting simulation 0 / run 14 / subset 3

2022-08-08 16:06:06,904 - root - INFO - Starting simulation 0 / run 4 / subset 2
2022-08-08 16:06:07,066 - root - INFO - Starting simulation 0 / run 6 / subset 1
2022-08-08 16:06:07,210 - root - INFO - Starting simulation 0 / run 8 / subset 0
2022-08-08 16:06:07,241 - root - INFO - Starting simulation 0 / run 1 / subset 0
2022-08-08 16:06:07,359 - root - INFO - Starting simulation 0 / run 2 / subset 3
2022-08-08 16:06:07,464 - root - INFO - Starting simulation 0 / run 16 / subset 3

2022-08-08 16:06:07,472 - root - INFO - Starting simulation 0 / run 9 / subset 3
2022-08-08 16:06:07,480 - root - INFO - Starting simulation 0 / run 15 / subset 0

2022-08-08 16:06:07,535 - root - INFO - Starting simulation 0 / run 18 / subset 2

2022-08-08 16:06:07,545 - root - INFO - Starting simulation 0 / run 20 / subset 1

2022-08-08 16:06:07,584 - root - INFO - Starting simulation 0 / run 25 / subset 2

2022-08-08 16:06:07,593 - root - INFO - Starting simulation 0 / run 22 / subset 0

2022-08-08 16:06:07,593 - root - INFO - Starting simulation 0 / run 13 / subset 1

2022-08-08 16:06:07,640 - root - INFO - Starting simulation 0 / run 11 / subset 2

2022-08-08 16:06:07,715 - root - INFO - Starting simulation 0 / run 23 / subset 3

2022-08-08 16:06:09,295 - root - INFO - Starting simulation 0 / run 4 / subset 3
2022-08-08 16:06:09,488 - root - INFO - Starting simulation 0 / run 6 / subset 2
2022-08-08 16:06:09,499 - root - INFO - Starting simulation 0 / run 13 / subset 2

2022-08-08 16:06:09,626 - root - INFO - Starting simulation 0 / run 8 / subset 1
2022-08-08 16:06:09,639 - root - INFO - Starting simulation 0 / run 1 / subset 1
2022-08-08 16:06:09,723 - root - INFO - Starting simulation 0 / run 3 / subset 0
2022-08-08 16:06:09,826 - root - INFO - Starting simulation 0 / run 15 / subset 1

2022-08-08 16:06:09,842 - root - INFO - Starting simulation 0 / run 17 / subset 0

2022-08-08 16:06:09,848 - root - INFO - Starting simulation 0 / run 10 / subset 0

2022-08-08 16:06:09,928 - root - INFO - Starting simulation 0 / run 18 / subset 3

2022-08-08 16:06:09,970 - root - INFO - Starting simulation 0 / run 25 / subset 3

2022-08-08 16:06:09,958 - root - INFO - Starting simulation 0 / run 20 / subset 2

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3
2022-08-08 16:06:10,015 - root - INFO - Starting simulation 0 / run 22 / subset
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2022-08-08 16:06:10,076 - root - INFO - Starting simulation 0 / run 24 / subset
0
2022-08-08 16:06:11,420 - root - INFO - Starting simulation 0 / run 13 / subset
3
2022-08-08 16:06:11,667 - root - INFO - Starting simulation 0 / run 5 / subset 0
2022-08-08 16:06:11,852 - root - INFO - Starting simulation 0 / run 6 / subset 3
2022-08-08 16:06:12,020 - root - INFO - Starting simulation 0 / run 1 / subset 2
2022-08-08 16:06:12,050 - root - INFO - Starting simulation 0 / run 8 / subset 2
2022-08-08 16:06:12,114 - root - INFO - Starting simulation 0 / run 3 / subset 1
2022-08-08 16:06:12,190 - root - INFO - Starting simulation 0 / run 15 / subset
2
2022-08-08 16:06:12,227 - root - INFO - Starting simulation 0 / run 17 / subset
1
2022-08-08 16:06:12,237 - root - INFO - Starting simulation 0 / run 10 / subset
1
2022-08-08 16:06:12,312 - root - INFO - Starting simulation 0 / run 19 / subset
0
2022-08-08 16:06:12,345 - root - INFO - Starting simulation 0 / run 26 / subset
0
2022-08-08 16:06:12,361 - root - INFO - Starting simulation 0 / run 20 / subset
3
2022-08-08 16:06:12,373 - root - INFO - Starting simulation 0 / run 12 / subset
0
2022-08-08 16:06:12,456 - root - INFO - Starting simulation 0 / run 22 / subset
2
2022-08-08 16:06:12,468 - root - INFO - Starting simulation 0 / run 24 / subset
1
2022-08-08 16:06:18,852 - root - INFO - Starting simulation 0 / run 26 / subset
1
2022-08-08 16:06:19,673 - root - INFO - Starting simulation 0 / run 28 / subset
0
2022-08-08 16:06:20,153 - root - INFO - Starting simulation 0 / run 29 / subset
3
2022-08-08 16:06:20,474 - root - INFO - Starting simulation 0 / run 31 / subset
2
2022-08-08 16:06:20,695 - root - INFO - Starting simulation 0 / run 33 / subset
1
2022-08-08 16:06:21,014 - root - INFO - Starting simulation 0 / run 26 / subset
2
2022-08-08 16:06:21,044 - root - INFO - Starting simulation 0 / run 35 / subset
0
2022-08-08 16:06:21,222 - root - INFO - Starting simulation 0 / run 36 / subset
3
2022-08-08 16:06:21,549 - root - INFO - Starting simulation 0 / run 38 / subset
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2

2022-08-08 16:06:21,697 - root - INFO - Starting simulation 0 / run 40 / subset 1

2022-08-08 16:06:21,805 - root - INFO - Starting simulation 0 / run 28 / subset 1

2022-08-08 16:06:21,913 - root - INFO - Starting simulation 0 / run 42 / subset 0

2022-08-08 16:06:22,096 - root - INFO - Starting simulation 0 / run 30 / subset 0

2022-08-08 16:06:22,323 - root - INFO - Starting simulation 0 / run 31 / subset 3

2022-08-08 16:06:22,366 - root - INFO - Starting simulation 0 / run 43 / subset 3

2022-08-08 16:06:22,581 - root - INFO - Starting simulation 0 / run 33 / subset 2

2022-08-08 16:06:22,586 - root - INFO - Starting simulation 0 / run 45 / subset 2

2022-08-08 16:06:22,807 - root - INFO - Starting simulation 0 / run 47 / subset 1

2022-08-08 16:06:23,026 - root - INFO - Starting simulation 0 / run 49 / subset 0

2022-08-08 16:06:23,153 - root - INFO - Starting simulation 0 / run 35 / subset 1

2022-08-08 16:06:23,267 - root - INFO - Starting simulation 0 / run 37 / subset 0

2022-08-08 16:06:23,273 - root - INFO - Starting simulation 0 / run 26 / subset 3

2022-08-08 16:06:23,602 - root - INFO - Starting simulation 0 / run 50 / subset 3

2022-08-08 16:06:23,995 - root - INFO - Starting simulation 0 / run 38 / subset 3

2022-08-08 16:06:24,028 - root - INFO - Starting simulation 0 / run 40 / subset 2

2022-08-08 16:06:24,094 - root - INFO - Starting simulation 0 / run 28 / subset 2

2022-08-08 16:06:24,126 - root - INFO - Starting simulation 0 / run 42 / subset 1

2022-08-08 16:06:24,340 - root - INFO - Starting simulation 0 / run 30 / subset 1

2022-08-08 16:06:24,671 - root - INFO - Starting simulation 0 / run 32 / subset 0

2022-08-08 16:06:24,779 - root - INFO - Starting simulation 0 / run 44 / subset 0

2022-08-08 16:06:24,984 - root - INFO - Starting simulation 0 / run 45 / subset 3

2022-08-08 16:06:25,022 - root - INFO - Starting simulation 0 / run 33 / subset 3

2022-08-08 16:06:25,256 - root - INFO - Starting simulation 0 / run 47 / subset

2

2022-08-08 16:06:25,399 - root - INFO - Starting simulation 0 / run 49 / subset 1

2022-08-08 16:06:25,557 - root - INFO - Starting simulation 0 / run 35 / subset 2

2022-08-08 16:06:25,685 - root - INFO - Starting simulation 0 / run 27 / subset 0

2022-08-08 16:06:25,717 - root - INFO - Starting simulation 0 / run 37 / subset 1

2022-08-08 16:06:26,066 - root - INFO - Starting simulation 0 / run 51 / subset 0

2022-08-08 16:06:26,191 - root - INFO - Starting simulation 0 / run 28 / subset 3

2022-08-08 16:06:26,377 - root - INFO - Starting simulation 0 / run 39 / subset 0

2022-08-08 16:06:26,379 - root - INFO - Starting simulation 0 / run 40 / subset 3

2022-08-08 16:06:26,548 - root - INFO - Starting simulation 0 / run 42 / subset 2

2022-08-08 16:06:26,607 - root - INFO - Starting simulation 0 / run 30 / subset 2

2022-08-08 16:06:26,814 - root - INFO - Starting simulation 0 / run 32 / subset 1

2022-08-08 16:06:27,186 - root - INFO - Starting simulation 0 / run 44 / subset 1

2022-08-08 16:06:27,408 - root - INFO - Starting simulation 0 / run 34 / subset 0

2022-08-08 16:06:27,437 - root - INFO - Starting simulation 0 / run 46 / subset 0

2022-08-08 16:06:27,695 - root - INFO - Starting simulation 0 / run 47 / subset 3

2022-08-08 16:06:27,800 - root - INFO - Starting simulation 0 / run 49 / subset 2

2022-08-08 16:06:27,829 - root - INFO - Starting simulation 0 / run 27 / subset 1

2022-08-08 16:06:27,969 - root - INFO - Starting simulation 0 / run 35 / subset 3

2022-08-08 16:06:28,145 - root - INFO - Starting simulation 0 / run 37 / subset 2

2022-08-08 16:06:28,480 - root - INFO - Starting simulation 0 / run 51 / subset 1

2022-08-08 16:06:28,562 - root - INFO - Starting simulation 0 / run 29 / subset 0

2022-08-08 16:06:28,784 - root - INFO - Starting simulation 0 / run 39 / subset 1

2022-08-08 16:06:28,807 - root - INFO - Starting simulation 0 / run 41 / subset 0

2022-08-08 16:06:28,908 - root - INFO - Starting simulation 0 / run 42 / subset

3

2022-08-08 16:06:28,915 - root - INFO - Starting simulation 0 / run 30 / subset
3

2022-08-08 16:06:29,223 - root - INFO - Starting simulation 0 / run 32 / subset
2

2022-08-08 16:06:29,565 - root - INFO - Starting simulation 0 / run 44 / subset
2

2022-08-08 16:06:29,634 - root - INFO - Starting simulation 0 / run 27 / subset
2

2022-08-08 16:06:29,824 - root - INFO - Starting simulation 0 / run 34 / subset
1

2022-08-08 16:06:29,904 - root - INFO - Starting simulation 0 / run 46 / subset
1

2022-08-08 16:06:30,095 - root - INFO - Starting simulation 0 / run 48 / subset
0

2022-08-08 16:06:30,236 - root - INFO - Starting simulation 0 / run 49 / subset
3

2022-08-08 16:06:30,377 - root - INFO - Starting simulation 0 / run 36 / subset
0

2022-08-08 16:06:30,559 - root - INFO - Starting simulation 0 / run 37 / subset
3

2022-08-08 16:06:30,883 - root - INFO - Starting simulation 0 / run 51 / subset
2

2022-08-08 16:06:31,005 - root - INFO - Starting simulation 0 / run 29 / subset
1

2022-08-08 16:06:31,198 - root - INFO - Starting simulation 0 / run 39 / subset
2

2022-08-08 16:06:31,216 - root - INFO - Starting simulation 0 / run 41 / subset
1

2022-08-08 16:06:31,268 - root - INFO - Starting simulation 0 / run 43 / subset
0

2022-08-08 16:06:31,362 - root - INFO - Starting simulation 0 / run 31 / subset
0

2022-08-08 16:06:31,609 - root - INFO - Starting simulation 0 / run 27 / subset
3

2022-08-08 16:06:31,638 - root - INFO - Starting simulation 0 / run 32 / subset
3

2022-08-08 16:06:31,923 - root - INFO - Starting simulation 0 / run 44 / subset
3

2022-08-08 16:06:32,247 - root - INFO - Starting simulation 0 / run 34 / subset
2

2022-08-08 16:06:32,370 - root - INFO - Starting simulation 0 / run 46 / subset
2

2022-08-08 16:06:32,526 - root - INFO - Starting simulation 0 / run 48 / subset
1

2022-08-08 16:06:32,623 - root - INFO - Starting simulation 0 / run 50 / subset
0

2022-08-08 16:06:32,758 - root - INFO - Starting simulation 0 / run 36 / subset

1
2022-08-08 16:06:32,997 - root - INFO - Starting simulation 0 / run 38 / subset 0
2022-08-08 16:06:33,304 - root - INFO - Starting simulation 0 / run 51 / subset 3
2022-08-08 16:06:33,421 - root - INFO - Starting simulation 0 / run 29 / subset 2
2022-08-08 16:06:33,576 - root - INFO - Starting simulation 0 / run 39 / subset 3
2022-08-08 16:06:33,629 - root - INFO - Starting simulation 0 / run 43 / subset 1
2022-08-08 16:06:33,653 - root - INFO - Starting simulation 0 / run 41 / subset 2
2022-08-08 16:06:33,857 - root - INFO - Starting simulation 0 / run 31 / subset 1
2022-08-08 16:06:34,131 - root - INFO - Starting simulation 0 / run 45 / subset 0
2022-08-08 16:06:34,160 - root - INFO - Starting simulation 0 / run 33 / subset 0
2022-08-08 16:06:34,779 - root - INFO - Starting simulation 0 / run 34 / subset 3
2022-08-08 16:06:34,838 - root - INFO - Starting simulation 0 / run 46 / subset 3
2022-08-08 16:06:34,885 - root - INFO - Starting simulation 0 / run 48 / subset 2
2022-08-08 16:06:35,050 - root - INFO - Starting simulation 0 / run 50 / subset 1
2022-08-08 16:06:35,127 - root - INFO - Starting simulation 0 / run 36 / subset 2
2022-08-08 16:06:35,368 - root - INFO - Starting simulation 0 / run 38 / subset 1
2022-08-08 16:06:35,764 - root - INFO - Starting simulation 0 / run 52 / subset 0
2022-08-08 16:06:36,018 - root - INFO - Starting simulation 0 / run 40 / subset 0
2022-08-08 16:06:36,067 - root - INFO - Starting simulation 0 / run 41 / subset 3
2022-08-08 16:06:36,194 - root - INFO - Starting simulation 0 / run 45 / subset 1
2022-08-08 16:06:36,400 - root - INFO - Starting simulation 0 / run 43 / subset 2
2022-08-08 16:06:37,371 - root - INFO - Starting simulation 0 / run 48 / subset 3
2022-08-08 16:06:37,441 - root - INFO - Starting simulation 0 / run 47 / subset 0
2022-08-08 16:06:37,608 - root - INFO - Starting simulation 0 / run 50 / subset 2
2022-08-08 16:06:38,369 - root - INFO - Starting simulation 0 / run 52 / subset

1

2022-08-08 16:06:39,734 - root - INFO - Starting simulation 0 / run 52 / subset 2

2022-08-08 16:06:42,186 - root - INFO - Starting simulation 0 / run 54 / subset 1

2022-08-08 16:06:42,511 - root - INFO - Starting simulation 0 / run 52 / subset 3

2022-08-08 16:06:42,652 - root - INFO - Starting simulation 0 / run 56 / subset 0

2022-08-08 16:06:43,342 - root - INFO - Starting simulation 0 / run 57 / subset 3

2022-08-08 16:06:43,657 - root - INFO - Starting simulation 0 / run 59 / subset 2

2022-08-08 16:06:43,986 - root - INFO - Starting simulation 0 / run 61 / subset 1

2022-08-08 16:06:44,318 - root - INFO - Starting simulation 0 / run 63 / subset 0

2022-08-08 16:06:44,808 - root - INFO - Starting simulation 0 / run 64 / subset 3

2022-08-08 16:06:44,943 - root - INFO - Starting simulation 0 / run 54 / subset 2

2022-08-08 16:06:45,049 - root - INFO - Starting simulation 0 / run 66 / subset 2

2022-08-08 16:06:45,232 - root - INFO - Starting simulation 0 / run 53 / subset 0

2022-08-08 16:06:45,573 - root - INFO - Starting simulation 0 / run 56 / subset 1

2022-08-08 16:06:45,837 - root - INFO - Starting simulation 0 / run 68 / subset 1

2022-08-08 16:06:46,032 - root - INFO - Starting simulation 0 / run 70 / subset 0

2022-08-08 16:06:46,053 - root - INFO - Starting simulation 0 / run 58 / subset 0

2022-08-08 16:06:46,308 - root - INFO - Starting simulation 0 / run 71 / subset 3

2022-08-08 16:06:46,513 - root - INFO - Starting simulation 0 / run 59 / subset 3

2022-08-08 16:06:46,519 - root - INFO - Starting simulation 0 / run 61 / subset 2

2022-08-08 16:06:46,542 - root - INFO - Starting simulation 0 / run 73 / subset 2

2022-08-08 16:06:46,767 - root - INFO - Starting simulation 0 / run 75 / subset 1

2022-08-08 16:06:47,012 - root - INFO - Starting simulation 0 / run 63 / subset 1

2022-08-08 16:06:47,247 - root - INFO - Starting simulation 0 / run 65 / subset 0

2022-08-08 16:06:47,503 - root - INFO - Starting simulation 0 / run 66 / subset

3

2022-08-08 16:06:47,558 - root - INFO - Starting simulation 0 / run 53 / subset
1

2022-08-08 16:06:47,735 - root - INFO - Starting simulation 0 / run 54 / subset
3

2022-08-08 16:06:47,799 - root - INFO - Starting simulation 0 / run 77 / subset
0

2022-08-08 16:06:47,985 - root - INFO - Starting simulation 0 / run 56 / subset
2

2022-08-08 16:06:48,371 - root - INFO - Starting simulation 0 / run 68 / subset
2

2022-08-08 16:06:48,491 - root - INFO - Starting simulation 0 / run 58 / subset
1

2022-08-08 16:06:48,571 - root - INFO - Starting simulation 0 / run 70 / subset
1

2022-08-08 16:06:48,880 - root - INFO - Starting simulation 0 / run 72 / subset
0

2022-08-08 16:06:49,064 - root - INFO - Starting simulation 0 / run 73 / subset
3

2022-08-08 16:06:49,144 - root - INFO - Starting simulation 0 / run 61 / subset
3

2022-08-08 16:06:49,259 - root - INFO - Starting simulation 0 / run 75 / subset
2

2022-08-08 16:06:49,471 - root - INFO - Starting simulation 0 / run 63 / subset
2

2022-08-08 16:06:49,644 - root - INFO - Starting simulation 0 / run 60 / subset
0

2022-08-08 16:06:49,683 - root - INFO - Starting simulation 0 / run 65 / subset
1

2022-08-08 16:06:49,994 - root - INFO - Starting simulation 0 / run 53 / subset
2

2022-08-08 16:06:49,995 - root - INFO - Starting simulation 0 / run 67 / subset
0

2022-08-08 16:06:50,338 - root - INFO - Starting simulation 0 / run 55 / subset
0

2022-08-08 16:06:50,584 - root - INFO - Starting simulation 0 / run 56 / subset
3

2022-08-08 16:06:50,641 - root - INFO - Starting simulation 0 / run 77 / subset
1

2022-08-08 16:06:50,900 - root - INFO - Starting simulation 0 / run 68 / subset
3

2022-08-08 16:06:51,059 - root - INFO - Starting simulation 0 / run 70 / subset
2

2022-08-08 16:06:51,061 - root - INFO - Starting simulation 0 / run 58 / subset
2

2022-08-08 16:06:51,353 - root - INFO - Starting simulation 0 / run 72 / subset
1

2022-08-08 16:06:51,573 - root - INFO - Starting simulation 0 / run 74 / subset

0

2022-08-08 16:06:51,751 - root - INFO - Starting simulation 0 / run 62 / subset
0

2022-08-08 16:06:51,771 - root - INFO - Starting simulation 0 / run 75 / subset
3

2022-08-08 16:06:51,939 - root - INFO - Starting simulation 0 / run 63 / subset
3

2022-08-08 16:06:52,183 - root - INFO - Starting simulation 0 / run 60 / subset
1

2022-08-08 16:06:52,301 - root - INFO - Starting simulation 0 / run 65 / subset
2

2022-08-08 16:06:52,418 - root - INFO - Starting simulation 0 / run 55 / subset
1

2022-08-08 16:06:52,460 - root - INFO - Starting simulation 0 / run 53 / subset
3

2022-08-08 16:06:52,559 - root - INFO - Starting simulation 0 / run 67 / subset
1

2022-08-08 16:06:53,067 - root - INFO - Starting simulation 0 / run 57 / subset
0

2022-08-08 16:06:53,154 - root - INFO - Starting simulation 0 / run 77 / subset
2

2022-08-08 16:06:53,374 - root - INFO - Starting simulation 0 / run 69 / subset
0

2022-08-08 16:06:53,513 - root - INFO - Starting simulation 0 / run 58 / subset
3

2022-08-08 16:06:53,597 - root - INFO - Starting simulation 0 / run 70 / subset
3

2022-08-08 16:06:53,924 - root - INFO - Starting simulation 0 / run 72 / subset
2

2022-08-08 16:06:54,070 - root - INFO - Starting simulation 0 / run 74 / subset
1

2022-08-08 16:06:54,226 - root - INFO - Starting simulation 0 / run 62 / subset
1

2022-08-08 16:06:54,291 - root - INFO - Starting simulation 0 / run 76 / subset
0

2022-08-08 16:06:54,491 - root - INFO - Starting simulation 0 / run 64 / subset
0

2022-08-08 16:06:54,684 - root - INFO - Starting simulation 0 / run 60 / subset
2

2022-08-08 16:06:54,770 - root - INFO - Starting simulation 0 / run 65 / subset
3

2022-08-08 16:06:54,969 - root - INFO - Starting simulation 0 / run 54 / subset
0

2022-08-08 16:06:55,141 - root - INFO - Starting simulation 0 / run 55 / subset
2

2022-08-08 16:06:55,293 - root - INFO - Starting simulation 0 / run 67 / subset
2

2022-08-08 16:06:55,596 - root - INFO - Starting simulation 0 / run 57 / subset

1
2022-08-08 16:06:55,768 - root - INFO - Starting simulation 0 / run 77 / subset
3
2022-08-08 16:06:56,005 - root - INFO - Starting simulation 0 / run 69 / subset
1
2022-08-08 16:06:56,105 - root - INFO - Starting simulation 0 / run 59 / subset
0
2022-08-08 16:06:56,106 - root - INFO - Starting simulation 0 / run 71 / subset
0
2022-08-08 16:06:56,514 - root - INFO - Starting simulation 0 / run 72 / subset
3
2022-08-08 16:06:56,633 - root - INFO - Starting simulation 0 / run 74 / subset
2
2022-08-08 16:06:56,839 - root - INFO - Starting simulation 0 / run 62 / subset
2
2022-08-08 16:06:56,875 - root - INFO - Starting simulation 0 / run 76 / subset
1
2022-08-08 16:06:57,005 - root - INFO - Starting simulation 0 / run 64 / subset
1
2022-08-08 16:06:57,290 - root - INFO - Starting simulation 0 / run 66 / subset
0
2022-08-08 16:06:57,616 - root - INFO - Starting simulation 0 / run 60 / subset
3
2022-08-08 16:06:58,199 - root - INFO - Starting simulation 0 / run 55 / subset
3
2022-08-08 16:06:58,300 - root - INFO - Starting simulation 0 / run 67 / subset
3
2022-08-08 16:06:58,532 - root - INFO - Starting simulation 0 / run 57 / subset
2
2022-08-08 16:06:58,657 - root - INFO - Starting simulation 0 / run 69 / subset
2
2022-08-08 16:06:59,089 - root - INFO - Starting simulation 0 / run 59 / subset
1
2022-08-08 16:06:59,107 - root - INFO - Starting simulation 0 / run 71 / subset
1
2022-08-08 16:06:59,297 - root - INFO - Starting simulation 0 / run 78 / subset
0
2022-08-08 16:06:59,536 - root - INFO - Starting simulation 0 / run 73 / subset
0
2022-08-08 16:06:59,770 - root - INFO - Starting simulation 0 / run 76 / subset
2
2022-08-08 16:07:00,238 - root - INFO - Starting simulation 0 / run 74 / subset
3
2022-08-08 16:07:00,498 - root - INFO - Starting simulation 0 / run 64 / subset
2
2022-08-08 16:07:00,583 - root - INFO - Starting simulation 0 / run 61 / subset
0
2022-08-08 16:07:00,633 - root - INFO - Starting simulation 0 / run 66 / subset

1

2022-08-08 16:07:00,752 - root - INFO - Starting simulation 0 / run 62 / subset 3

2022-08-08 16:07:01,394 - root - INFO - Starting simulation 0 / run 69 / subset 3

2022-08-08 16:07:01,612 - root - INFO - Starting simulation 0 / run 68 / subset 0

2022-08-08 16:07:01,958 - root - INFO - Starting simulation 0 / run 71 / subset 2

2022-08-08 16:07:02,343 - root - INFO - Starting simulation 0 / run 78 / subset 1

2022-08-08 16:07:02,619 - root - INFO - Starting simulation 0 / run 73 / subset 1

2022-08-08 16:07:02,636 - root - INFO - Starting simulation 0 / run 76 / subset 3

2022-08-08 16:07:03,172 - root - INFO - Starting simulation 0 / run 75 / subset 0

2022-08-08 16:07:05,091 - root - INFO - Starting simulation 0 / run 78 / subset 3

2022-08-08 16:07:05,147 - root - INFO - Starting simulation 0 / run 78 / subset 2

2022-08-08 16:07:08,149 - root - INFO - Starting simulation 0 / run 79 / subset 0

2022-08-08 16:07:08,649 - root - INFO - Starting simulation 0 / run 80 / subset 2

2022-08-08 16:07:08,995 - root - INFO - Starting simulation 0 / run 82 / subset 1

2022-08-08 16:07:09,287 - root - INFO - Starting simulation 0 / run 84 / subset 0

2022-08-08 16:07:10,415 - root - INFO - Starting simulation 0 / run 85 / subset 3

2022-08-08 16:07:10,837 - root - INFO - Starting simulation 0 / run 87 / subset 2

2022-08-08 16:07:11,183 - root - INFO - Starting simulation 0 / run 89 / subset 1

2022-08-08 16:07:11,309 - root - INFO - Starting simulation 0 / run 79 / subset 1

2022-08-08 16:07:11,587 - root - INFO - Starting simulation 0 / run 91 / subset 0

2022-08-08 16:07:11,989 - root - INFO - Starting simulation 0 / run 92 / subset 3

2022-08-08 16:07:12,026 - root - INFO - Starting simulation 0 / run 80 / subset 3

2022-08-08 16:07:12,358 - root - INFO - Starting simulation 0 / run 82 / subset 2

2022-08-08 16:07:12,579 - root - INFO - Starting simulation 0 / run 84 / subset 1

2022-08-08 16:07:13,457 - root - INFO - Starting simulation 0 / run 94 / subset

2

2022-08-08 16:07:13,782 - root - INFO - Starting simulation 0 / run 96 / subset 1

2022-08-08 16:07:13,825 - root - INFO - Starting simulation 0 / run 86 / subset 0

2022-08-08 16:07:13,988 - root - INFO - Starting simulation 0 / run 79 / subset 2

2022-08-08 16:07:14,031 - root - INFO - Starting simulation 0 / run 87 / subset 3

2022-08-08 16:07:14,059 - root - INFO - Starting simulation 0 / run 98 / subset 0

2022-08-08 16:07:14,299 - root - INFO - Starting simulation 0 / run 91 / subset 1

2022-08-08 16:07:14,370 - root - INFO - Starting simulation 0 / run 99 / subset 3

2022-08-08 16:07:14,690 - root - INFO - Starting simulation 0 / run 89 / subset 2

2022-08-08 16:07:14,807 - root - INFO - Starting simulation 0 / run 93 / subset 0

2022-08-08 16:07:15,230 - root - INFO - Starting simulation 0 / run 82 / subset 3

2022-08-08 16:07:15,343 - root - INFO - Starting simulation 0 / run 84 / subset 2

2022-08-08 16:07:15,472 - root - INFO - Starting simulation 0 / run 81 / subset 0

2022-08-08 16:07:16,659 - root - INFO - Starting simulation 0 / run 94 / subset 3

2022-08-08 16:07:16,687 - root - INFO - Starting simulation 0 / run 96 / subset 2

2022-08-08 16:07:16,776 - root - INFO - Starting simulation 0 / run 86 / subset 1

2022-08-08 16:07:16,813 - root - INFO - Starting simulation 0 / run 88 / subset 0

2022-08-08 16:07:16,863 - root - INFO - Starting simulation 0 / run 79 / subset 3

2022-08-08 16:07:16,972 - root - INFO - Starting simulation 0 / run 91 / subset 2

2022-08-08 16:07:17,084 - root - INFO - Starting simulation 0 / run 98 / subset 1

2022-08-08 16:07:17,307 - root - INFO - Starting simulation 0 / run 89 / subset 3

2022-08-08 16:07:17,515 - root - INFO - Starting simulation 0 / run 93 / subset 1

2022-08-08 16:07:17,730 - root - INFO - Starting simulation 0 / run 83 / subset 0

2022-08-08 16:07:17,893 - root - INFO - Starting simulation 0 / run 84 / subset 3

2022-08-08 16:07:18,082 - root - INFO - Starting simulation 0 / run 81 / subset

1

2022-08-08 16:07:19,255 - root - INFO - Starting simulation 0 / run 96 / subset 3

2022-08-08 16:07:19,264 - root - INFO - Starting simulation 0 / run 95 / subset 0

2022-08-08 16:07:19,278 - root - INFO - Starting simulation 0 / run 80 / subset 0

2022-08-08 16:07:19,336 - root - INFO - Starting simulation 0 / run 86 / subset 2

2022-08-08 16:07:19,369 - root - INFO - Starting simulation 0 / run 88 / subset 1

2022-08-08 16:07:19,376 - root - INFO - Starting simulation 0 / run 91 / subset 3

2022-08-08 16:07:19,666 - root - INFO - Starting simulation 0 / run 98 / subset 2

2022-08-08 16:07:19,926 - root - INFO - Starting simulation 0 / run 90 / subset 0

2022-08-08 16:07:20,125 - root - INFO - Starting simulation 0 / run 83 / subset 1

2022-08-08 16:07:20,207 - root - INFO - Starting simulation 0 / run 85 / subset 0

2022-08-08 16:07:20,220 - root - INFO - Starting simulation 0 / run 93 / subset 2

2022-08-08 16:07:20,602 - root - INFO - Starting simulation 0 / run 81 / subset 2

2022-08-08 16:07:21,406 - root - INFO - Starting simulation 0 / run 97 / subset 0

2022-08-08 16:07:21,462 - root - INFO - Starting simulation 0 / run 80 / subset 1

2022-08-08 16:07:21,785 - root - INFO - Starting simulation 0 / run 95 / subset 1

2022-08-08 16:07:21,792 - root - INFO - Starting simulation 0 / run 92 / subset 0

2022-08-08 16:07:21,823 - root - INFO - Starting simulation 0 / run 86 / subset 3

2022-08-08 16:07:21,837 - root - INFO - Starting simulation 0 / run 88 / subset 2

2022-08-08 16:07:22,202 - root - INFO - Starting simulation 0 / run 98 / subset 3

2022-08-08 16:07:22,442 - root - INFO - Starting simulation 0 / run 83 / subset 2

2022-08-08 16:07:22,656 - root - INFO - Starting simulation 0 / run 90 / subset 1

2022-08-08 16:07:22,664 - root - INFO - Starting simulation 0 / run 85 / subset 1

2022-08-08 16:07:22,803 - root - INFO - Starting simulation 0 / run 93 / subset 3

2022-08-08 16:07:23,090 - root - INFO - Starting simulation 0 / run 81 / subset

3
2022-08-08 16:07:23,806 - root - INFO - Starting simulation 0 / run 97 / subset 1
2022-08-08 16:07:24,151 - root - INFO - Starting simulation 0 / run 92 / subset 1
2022-08-08 16:07:24,291 - root - INFO - Starting simulation 0 / run 87 / subset 0
2022-08-08 16:07:24,309 - root - INFO - Starting simulation 0 / run 95 / subset 2
2022-08-08 16:07:24,337 - root - INFO - Starting simulation 0 / run 88 / subset 3
2022-08-08 16:07:24,625 - root - INFO - Starting simulation 0 / run 99 / subset 0
2022-08-08 16:07:25,030 - root - INFO - Starting simulation 0 / run 83 / subset 3
2022-08-08 16:07:25,068 - root - INFO - Starting simulation 0 / run 90 / subset 2
2022-08-08 16:07:25,171 - root - INFO - Starting simulation 0 / run 85 / subset 2
2022-08-08 16:07:25,363 - root - INFO - Starting simulation 0 / run 94 / subset 0
2022-08-08 16:07:25,603 - root - INFO - Starting simulation 0 / run 82 / subset 0
2022-08-08 16:07:26,075 - root - INFO - Starting simulation 0 / run 97 / subset 2
2022-08-08 16:07:26,601 - root - INFO - Starting simulation 0 / run 92 / subset 2
2022-08-08 16:07:26,932 - root - INFO - Starting simulation 0 / run 87 / subset 1
2022-08-08 16:07:26,972 - root - INFO - Starting simulation 0 / run 89 / subset 0
2022-08-08 16:07:27,272 - root - INFO - Starting simulation 0 / run 95 / subset 3
2022-08-08 16:07:27,560 - root - INFO - Starting simulation 0 / run 99 / subset 1
2022-08-08 16:07:28,770 - root - INFO - Starting simulation 0 / run 90 / subset 3
2022-08-08 16:07:29,718 - root - INFO - Starting simulation 0 / run 94 / subset 1
2022-08-08 16:07:30,672 - root - INFO - Starting simulation 0 / run 97 / subset 3
2022-08-08 16:07:32,601 - root - INFO - Starting simulation 0 / run 96 / subset 0
2022-08-08 16:07:33,306 - root - INFO - Starting simulation 0 / run 99 / subset 2
2022-08-08 16:07:47,862 - root - INFO - Experiment complete in 111.5421895980835 seconds
2022-08-08 16:07:47,863 - root - INFO - Post-processing results

```
2022-08-08 16:11:37,828 - root - INFO - Post-processing complete in
229.96623826026917 seconds
```

7.0.3 0. Parameter Sweeps for the Analysis

In this analysis we look at the effect of setting the FEI savings rate in four ways: - As a constant process below the money market supply rate - As a constant process above the money market supply rate - As a step function which moves between the two processes - Disabled

We assume the demand for populating each deposit will depend on the rate of yield offered by the deposit, and gauge to what extent the difference in deposit yield affects how deposits are populated. We also look at the effect this has on Liquidity Pools, and a few other downstream effects on mechanism-specific metrics.

Visualization of parameter sweep: We sweep the fei savings rate process for three values, two constant processes and a step function
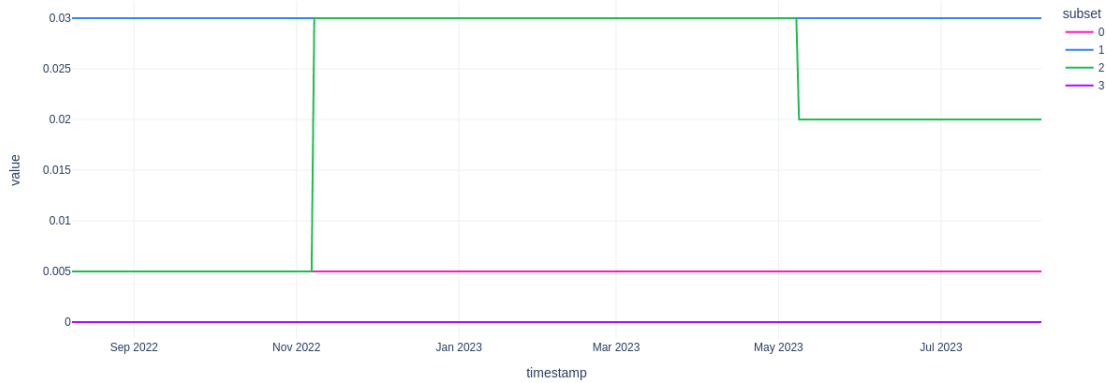
A visualization of the volatile asset price trajectories used in each monte carlo run:
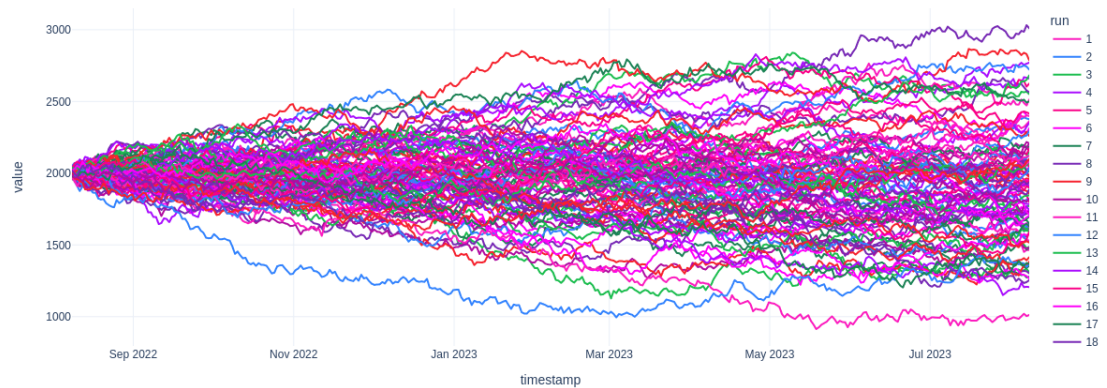
7.0.4 1. CAM Weights and Deposit Allocation Proportions

1.1 FEI Savings Rate Setting 1

CAM Weight Evolution for FEI Savings Rate Setting 1, across multiple runs
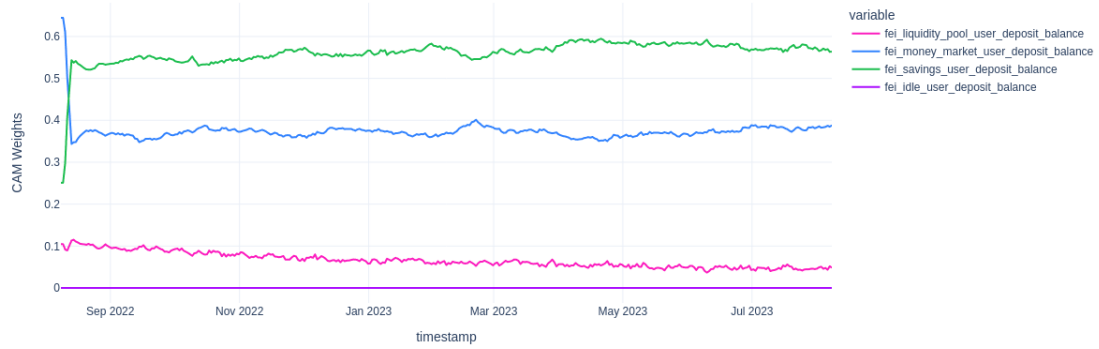
FEI Capital Allocation for FEI Savings Rate Setting 1
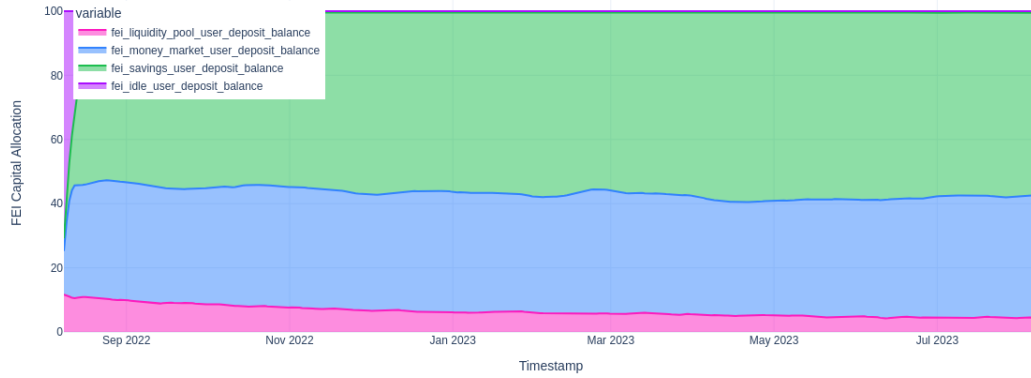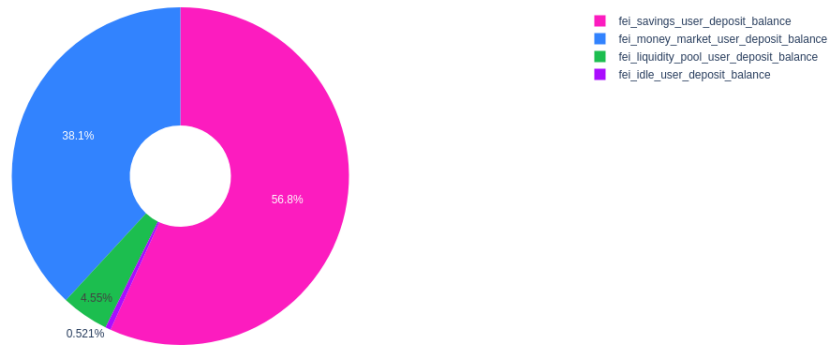
1.2 FEI Savings Rate Setting 2

CAM Weight Evolution for FEI Savings Rate Setting 2, across multiple runs

FEI Capital Allocation for FEI Savings Rate Setting 2

Legend:
- fei_savings_user_deposit_balance
- fei_money_market_user_deposit_balance
- fei_liquidity_pool_user_deposit_balance
- fei_idle_user_deposit_balance

1.3 FEI Savings Rate Setting 3

CAM Weight Evolution for FEI Savings Rate Setting 3, across multiple runs
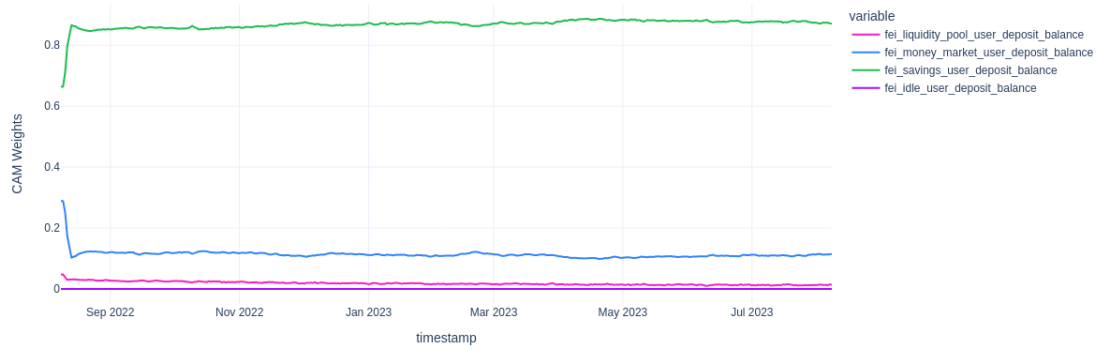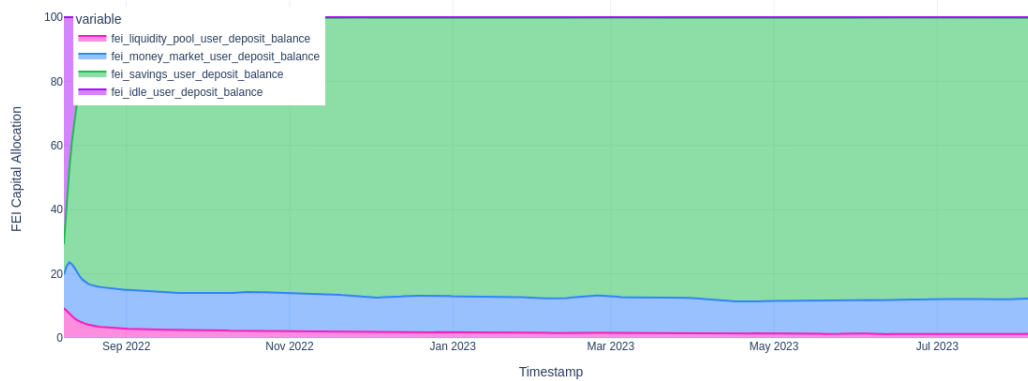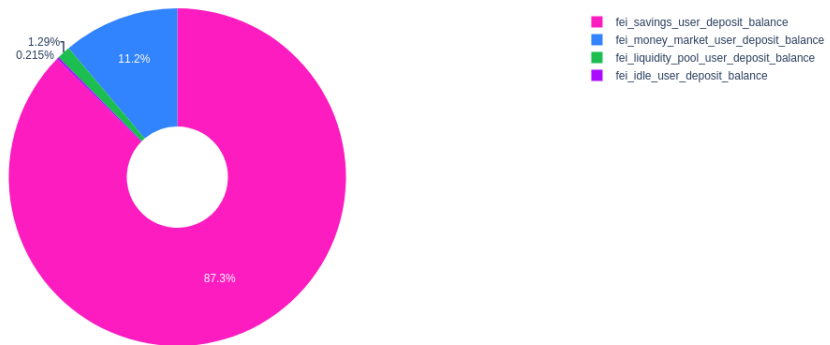
FEI Capital Allocation for FEI Savings Rate Setting 3

1.4 FEI Savings Rate Setting 4

CAM Weight Evolution for FEI Savings Rate Setting 4, across multiple runs
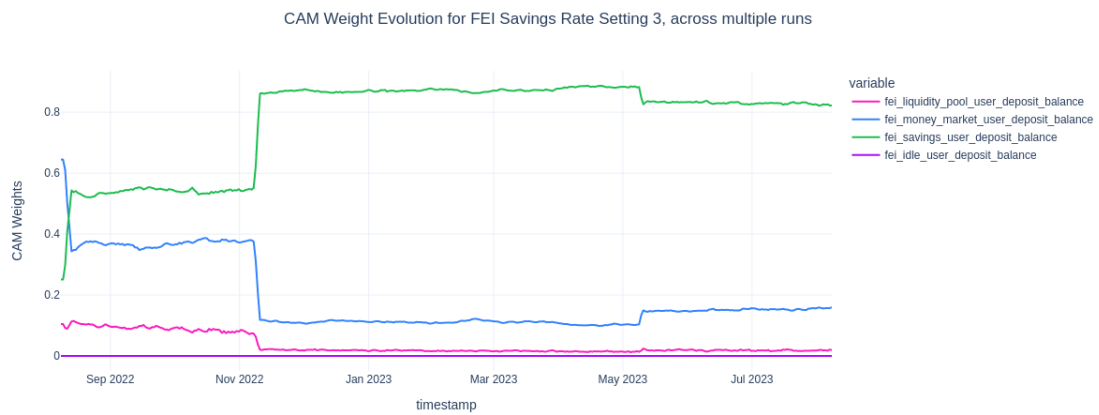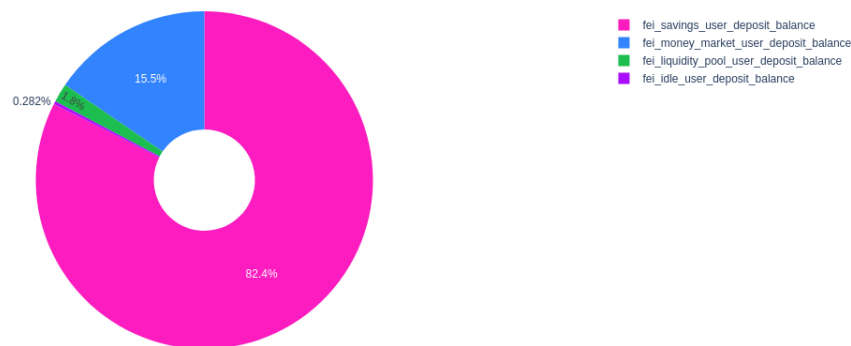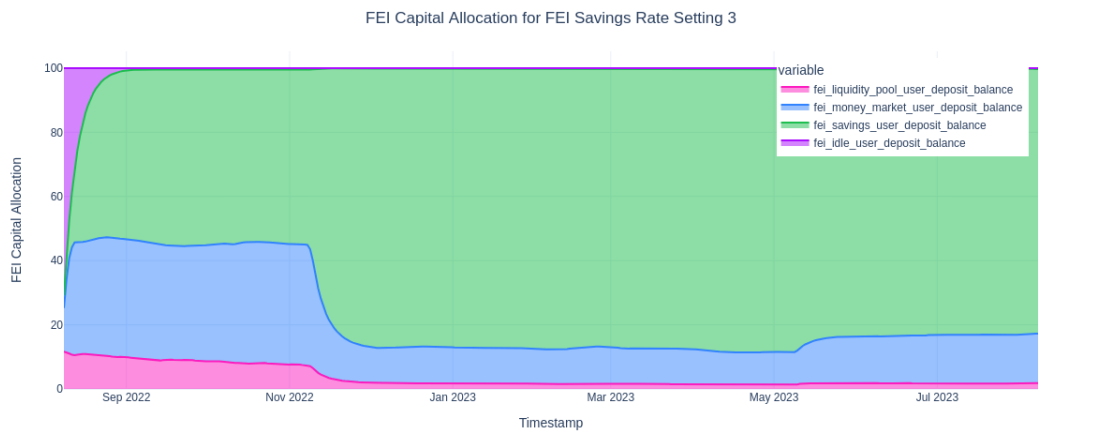
FEI Capital Allocation for FEI Savings Rate Setting 4

7.0.5 2. User Circulating FEI Deposit Evolution
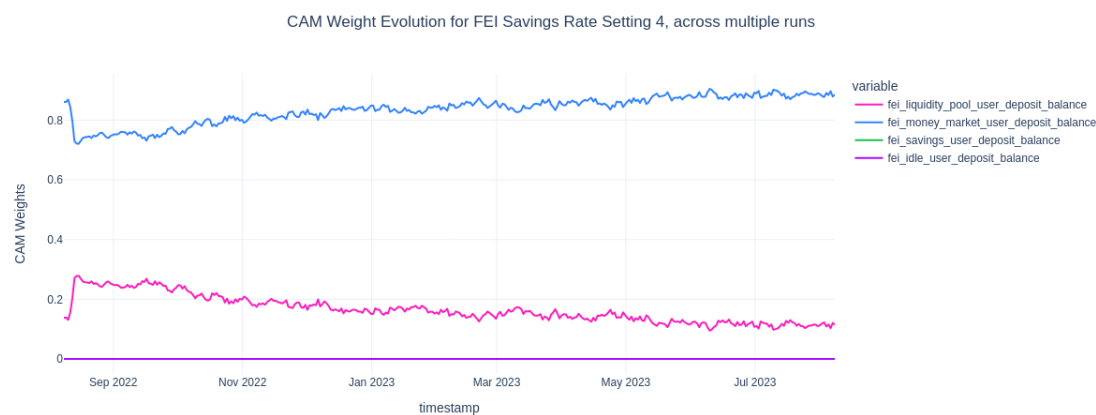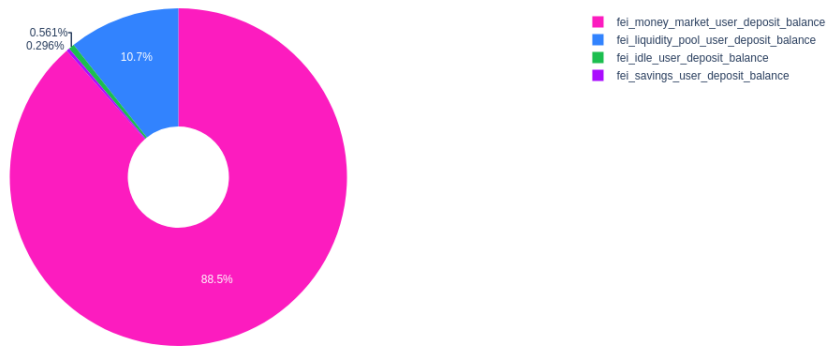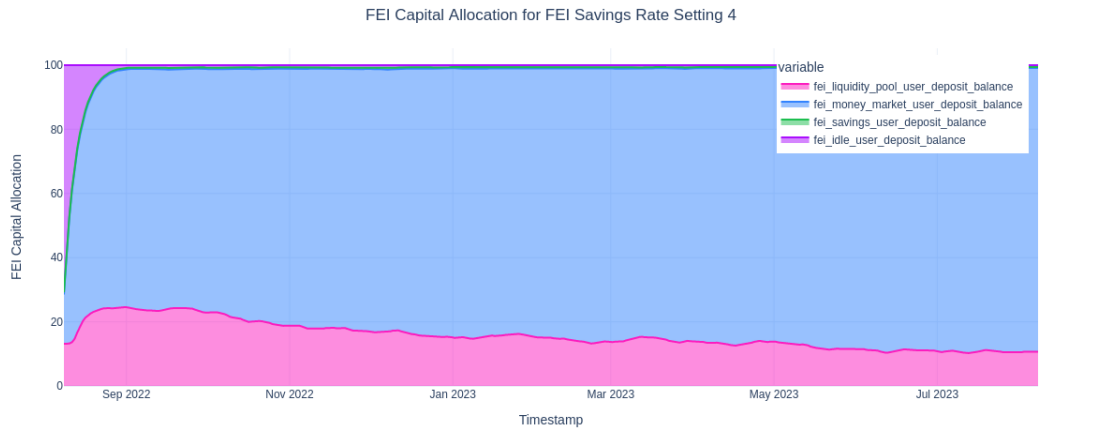
2.1 Total User Circulating FEI

Total User Circulating FEI
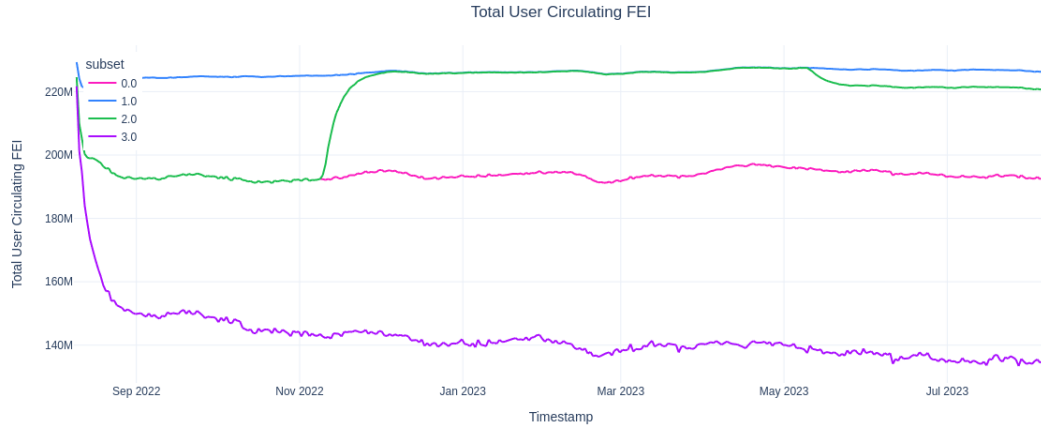
What is the implicit impact of the introduction of a FEI savings deposit on overall User Circulating FEI?

With an extra yield-bearning avenue for users to hold FEI, mint/redemption dynamics as a result of liquidity pool and money market FEI and asset circulation will differ. As a result, so will the total user circulating FEI.

We can analyze this by looking at the empiricial probability of the total user circulating FEI hitting predetermined levels in cases where the FEI savings deposit is enabled vs disabled.

```
The empirical probability that subset 0 is greater on average than subset 1 is
0.0
The empirical probability that subset 0 is greater on average than subset 2 is
0.0
The empirical probability that subset 0 is greater on average than subset 3 is
1.0
The empirical probability that subset 1 is greater on average than subset 2 is
1.0
The empirical probability that subset 1 is greater on average than subset 3 is
1.0
The empirical probability that subset 2 is greater on average than subset 3 is
1.0

This state variable has a 0.0 % probability of reaching a value of 246000000 ,
for subset 0
This state variable has a 0.0 % probability of reaching a value of 246000000 ,
for subset 1
This state variable has a 0.0 % probability of reaching a value of 246000000 ,
for subset 2
This state variable has a 0.0 % probability of reaching a value of 246000000 ,
for subset 3
```
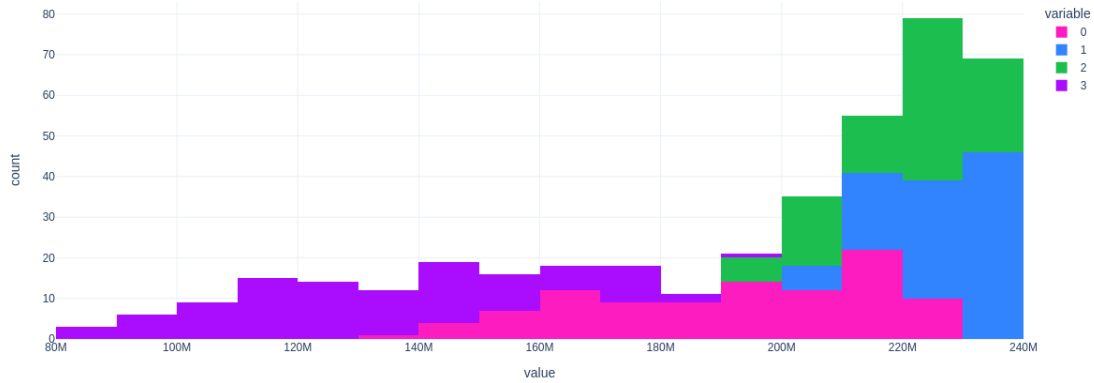
```
     volatility           max            min    final value    max dd
0     0.021587   2.254970e+08   1.563010e+08   1.921561e+08 -0.235677
1     0.004632   2.344464e+08   2.098398e+08   2.262691e+08 -0.072542
2     0.013915   2.329909e+08   1.630484e+08   2.206320e+08 -0.197466
3     0.069429   2.217060e+08   9.763029e+07   1.339367e+08 -0.419416
```

Conclusion: As we can see, in scenarios where the FEI savings rate is higher, total user circulating FEI is lower - attesting to the functionality of the FEI savings deposit as a demand sink for FEI. This is seen by the lower average final value attained, in combination with the resulting empirical probability of circulating FEI being higher in scenarios where a fei demand sink is present being very low (around 0.25).

7.0.6 CAM Constituent Deposits:

What is the average impact of monetary policy settings of a fei savings rate in relation to other yield bearing and idle avenues for user circulating FEI?

We can analyze this by looking at the empiricial probability of the size of the deposit FEI hitting predetermined levels of overall proportion of user circulating FEI attained by the deposit.

2.2 FEI Liquidity Pool Deposit
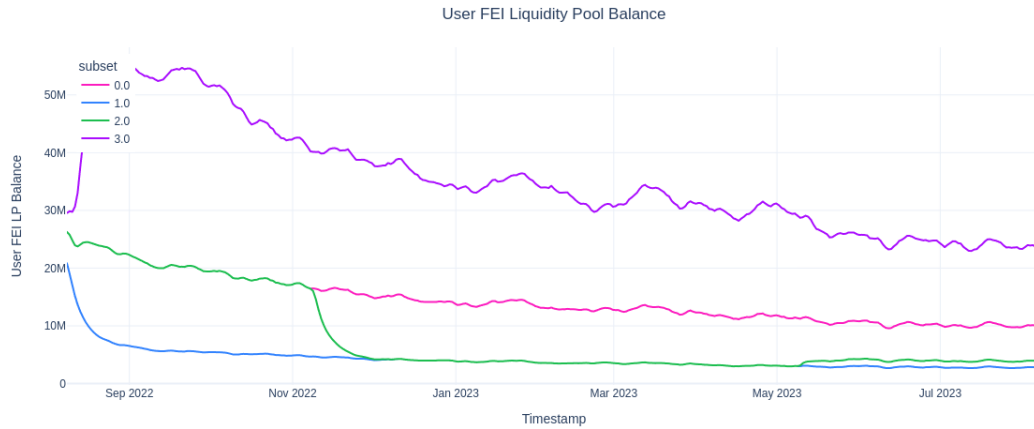
User FEI Liquidity Pool Balance

The empirical probability that subset 0 is greater on average than subset 1 is
1.0
The empirical probability that subset 0 is greater on average than subset 2 is
1.0
The empirical probability that subset 0 is greater on average than subset 3 is
0.0
The empirical probability that subset 1 is greater on average than subset 2 is
0.0
The empirical probability that subset 1 is greater on average than subset 3 is
0.0
The empirical probability that subset 2 is greater on average than subset 3 is
0.0

This deposit has a 22.0 % probability of reaching an allocation of 10.0 %, for
subset 0
This deposit has a 0.0 % probability of reaching an allocation of 10.0 %, for
subset 1
This deposit has a 0.0 % probability of reaching an allocation of 10.0 %, for
subset 2
This deposit has a 51.0 % probability of reaching an allocation of 10.0 %, for
subset 3
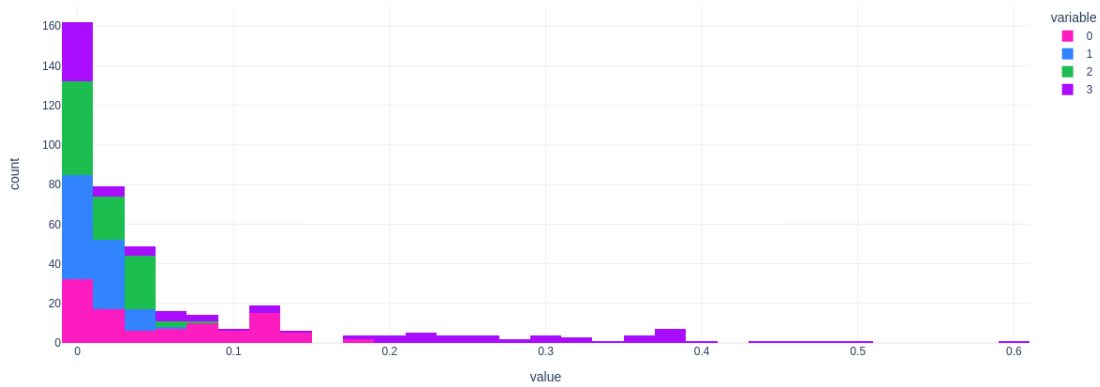
	volatility	max	min	final value	max dd
0	9.457470e-01	3.613328e+07	2.339458e+06	1.022184e+07	-0.891479
1	7.144374e-01	2.091359e+07	6.170953e+05	2.902812e+06	-0.904347
2	6.710984e-01	3.437411e+07	7.747006e+05	4.045159e+06	-0.923891
3	1.016314e+11	9.259480e+07	5.587529e+06	2.390513e+07	-0.899044

2.3 FEI Money Market Deposit
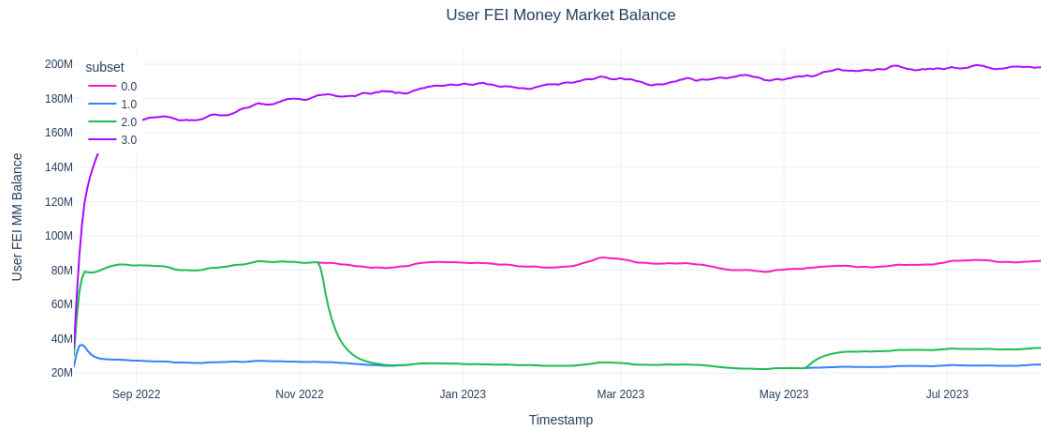
The empirical probability that subset 0 is greater on average than subset 1 is 1.0

The empirical probability that subset 0 is greater on average than subset 2 is 1.0

The empirical probability that subset 0 is greater on average than subset 3 is 0.0

The empirical probability that subset 1 is greater on average than subset 2 is

0.0
The empirical probability that subset 1 is greater on average than subset 3 is
0.0
The empirical probability that subset 2 is greater on average than subset 3 is
0.0

This deposit has a 69.0 % probability of reaching an allocation of 30.0 %, for
subset 0
This deposit has a 0.0 % probability of reaching an allocation of 30.0 %, for
subset 1
This deposit has a 12.0 % probability of reaching an allocation of 30.0 %, for
subset 2
This deposit has a 100.0 % probability of reaching an allocation of 30.0 %, for
subset 3
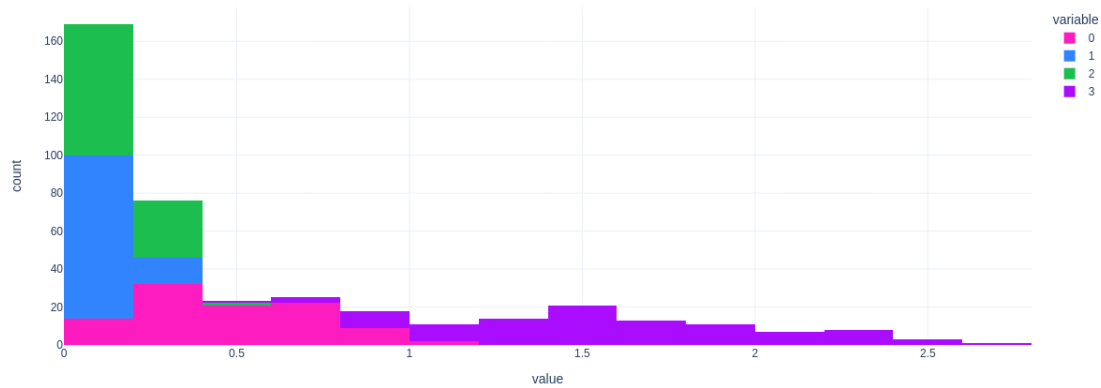
	volatility	max	min	final value	max dd
0	0.050220	1.279240e+08	2.857923e+07	8.567780e+07	-0.551484
1	0.044003	5.158261e+07	1.038266e+07	2.510146e+07	-0.694988
2	0.056803	1.202996e+08	1.280090e+07	3.478906e+07	-0.777526
3	0.055391	2.182381e+08	3.463022e+07	1.982507e+08	-0.311370

2.4 FEI Savings User Deposit
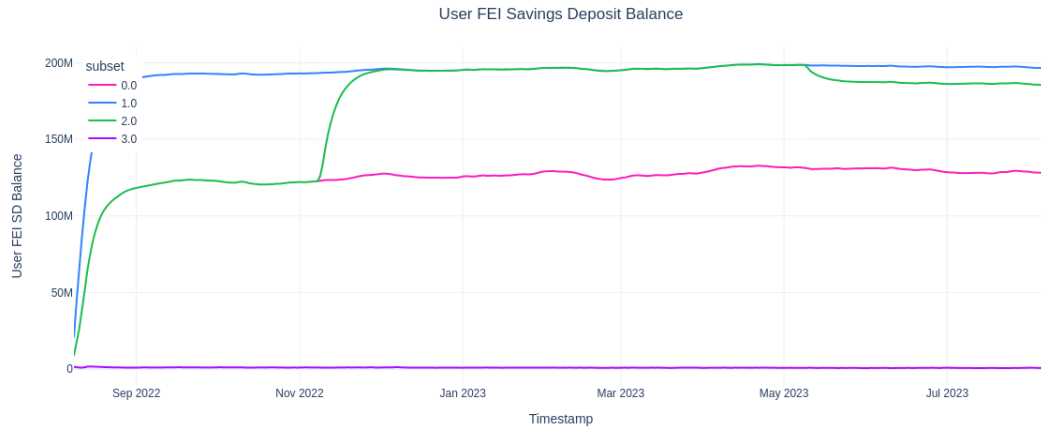
User FEI Savings Deposit Balance

The empirical probability that subset 0 is greater on average than subset 1 is 0.0

The empirical probability that subset 0 is greater on average than subset 2 is 0.0

The empirical probability that subset 0 is greater on average than subset 3 is 1.0

The empirical probability that subset 1 is greater on average than subset 2 is 1.0

The empirical probability that subset 1 is greater on average than subset 3 is 1.0

The empirical probability that subset 2 is greater on average than subset 3 is 1.0

This deposit has a 69.0 % probability of reaching an allocation of 60.0 %, for subset 0

This deposit has a 100.0 % probability of reaching an allocation of 60.0 %, for subset 1

This deposit has a 100.0 % probability of reaching an allocation of 60.0 %, for subset 2

This deposit has a 0.0 % probability of reaching an allocation of 60.0 %, for subset 3
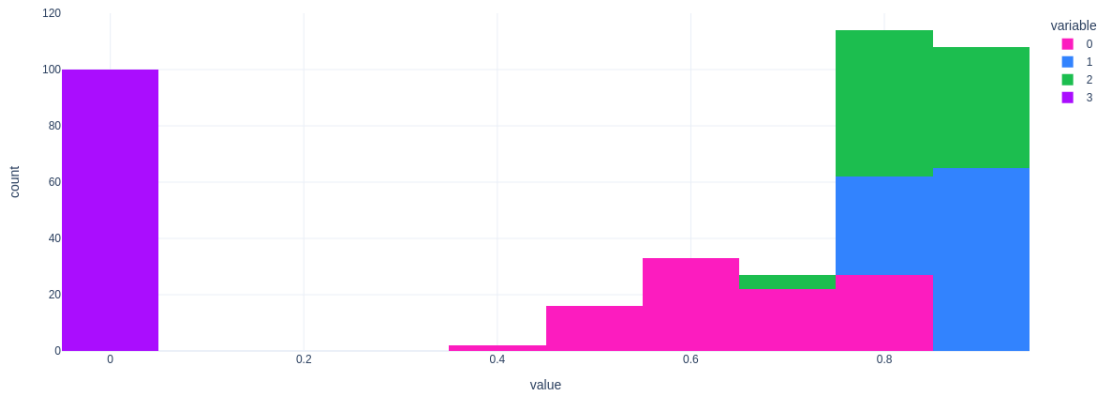
```
    volatility            max            min   final value       max dd
0  7.128632e-02  1.644610e+08  8.804844e+06  1.276459e+08  -0.368509
1  6.796487e-02  2.104161e+08  2.094483e+07  1.964499e+08  -0.128336
2  7.030014e-02  2.085058e+08  8.804844e+06  1.853778e+08  -0.278385
3  2.206895e+11  4.103383e+06  9.511562e+04  6.635048e+05  -0.953736
```

2.5 FEI Idle Deposit
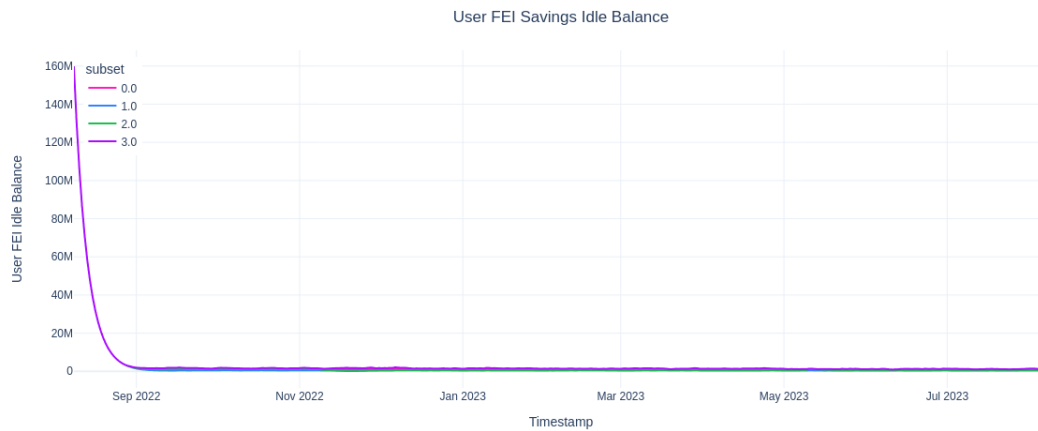
The empirical probability that subset 0 is greater on average than subset 1 is
1.0
The empirical probability that subset 0 is greater on average than subset 2 is
1.0
The empirical probability that subset 0 is greater on average than subset 3 is
0.17
The empirical probability that subset 1 is greater on average than subset 2 is

0.0

The empirical probability that subset 1 is greater on average than subset 3 is 0.05

The empirical probability that subset 2 is greater on average than subset 3 is 0.06

This deposit has a 0.0 % probability of reaching an allocation of 10.0 %, for subset 0

This deposit has a 0.0 % probability of reaching an allocation of 10.0 %, for subset 1

This deposit has a 0.0 % probability of reaching an allocation of 10.0 %, for subset 2

This deposit has a 0.0 % probability of reaching an allocation of 10.0 %, for subset 3

	volatility	max	min	final value	max dd
0	7.128632e-02	1.644610e+08	8.804844e+06	1.276459e+08	-0.368509
1	6.796487e-02	2.104161e+08	2.094483e+07	1.964499e+08	-0.128336
2	7.030014e-02	2.085058e+08	8.804844e+06	1.853778e+08	-0.278385
3	2.206895e+11	4.103383e+06	9.511562e+04	6.635048e+05	-0.953736

7.0.7 3 State variables for Mechanisms associated to FEI deposits

3.1 FEI Money Market Dynamics
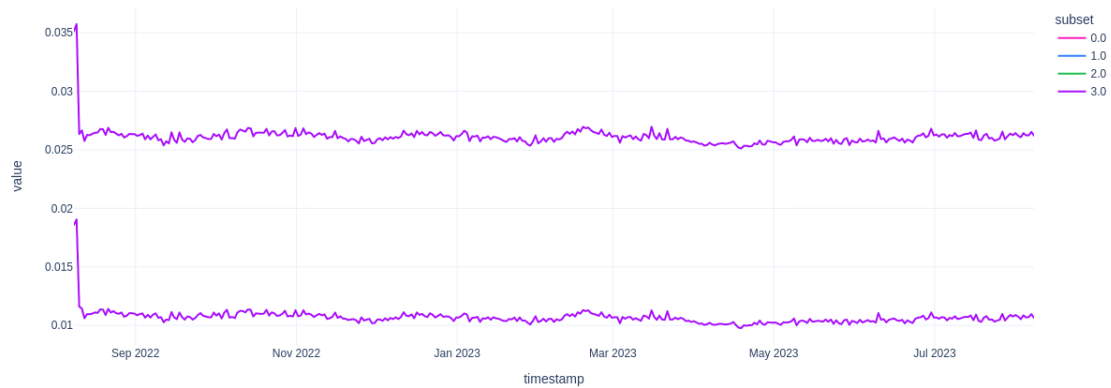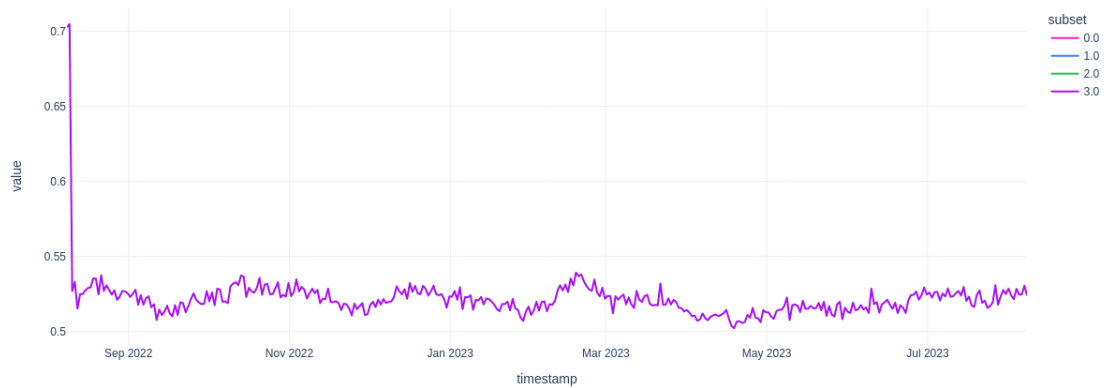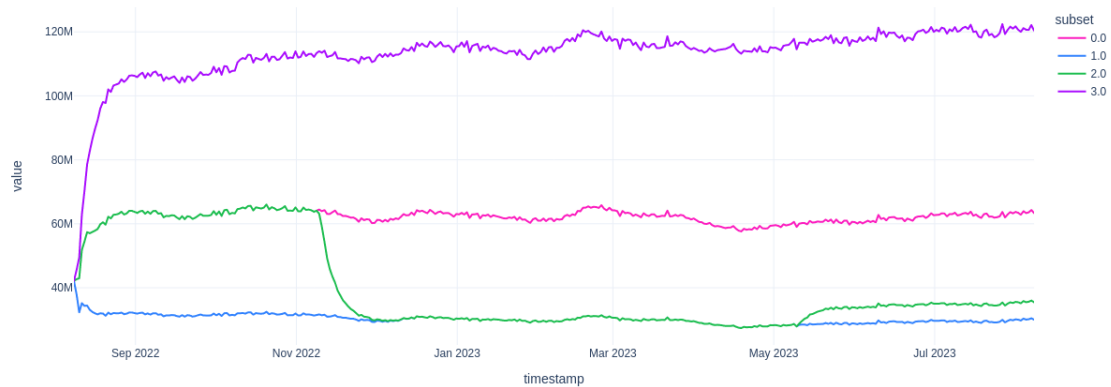
3.2 FEI Liquidity Pool Dynamics
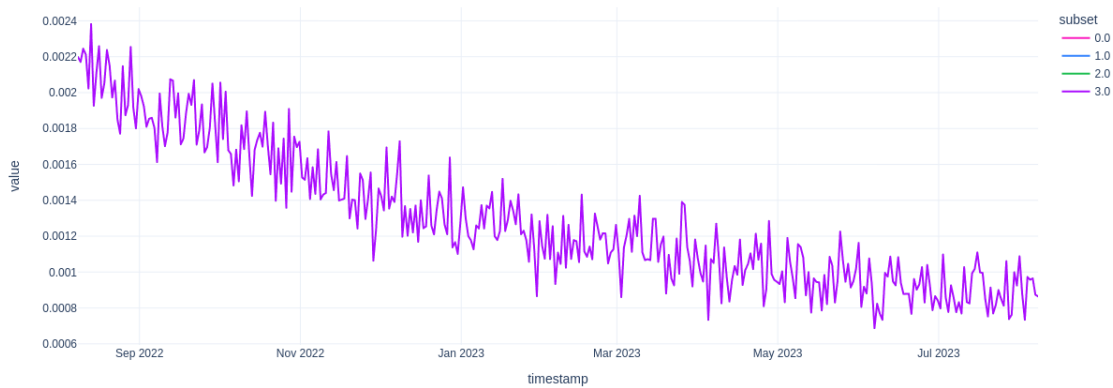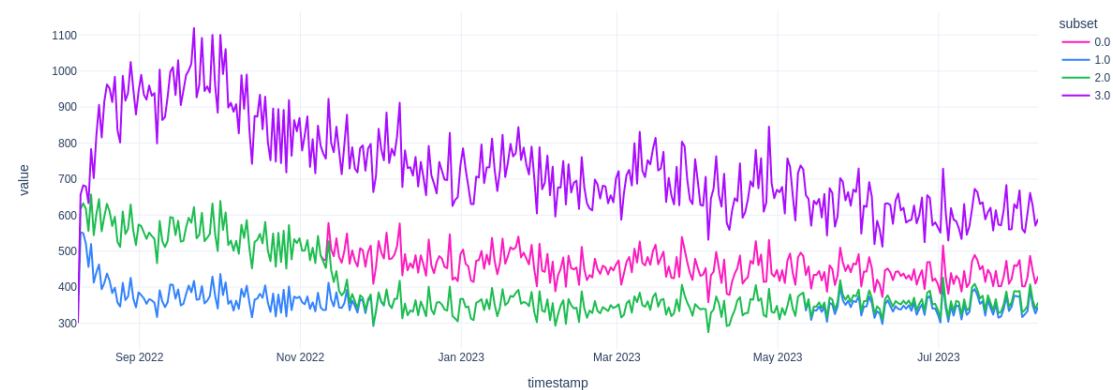
3.1 FEI Savings Deposit Dynamics
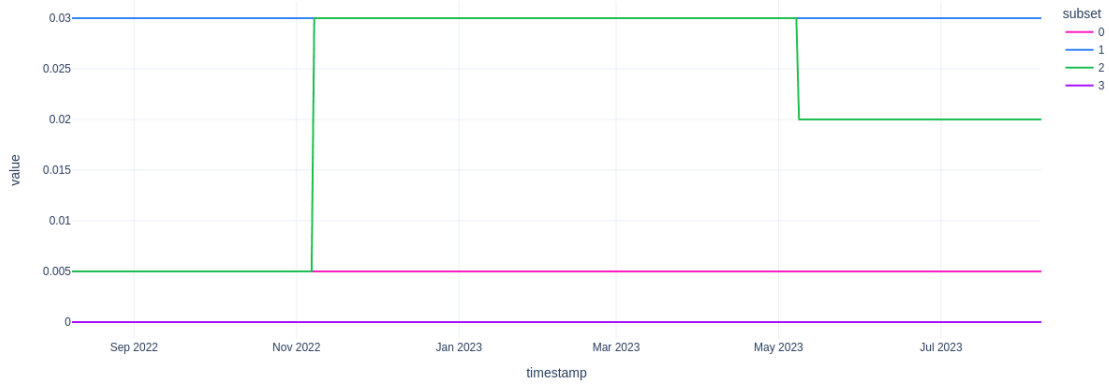
7.1   4. Conclusion

From this analyisis we can make the following qualitative conclusion - when aggregate demand for deposits is based on yield rates as the only driver of utility, deposit population will converge to the mechanism offering the highest yield. We notice specifically that in trajectory 3, given the non-instantaneous rebalance velocity, that utilization of the FSD never reaches that attained in trajectory 2, but also does not fall back below that of trajectory 1.

We furthermore notice the existance of downstream effects on money market utilization and liquidity pool yield, more greatly sustained when both these deposits have higher affluence.

We finally notice some minor downstream effects on the collateralization ratio. Here, this process is affected by changes in PCV value and PCV yield accrued, as well as changes in user circulating FEI, the former affected by money market usage and the latter by liquidity pool usage.

8   Appendix: Sustainability of FEI Savings Rate with protocol revenue

In the previous analysis we have inspected the effect of including a FEI savings rate on the circulation of user FEI driven by aggregate demand for yield.

Here, we are concerned with the sustainability of the FEI savings rate in relation to protocol revenue. In practice, we attempt to answer how likely is it that protocol revenue can cover fei savings rate expenditure under different settings of the FEI savings rate.

Analysis Setup

- Protocol revenue is the sum of PSM redemption fees and PCV yield
- FEI Savings Rate expenditure is the amount of FEI distributed to users of the FEI savings deposit, at the current size of the deposit and the current rate

We begin by looking at the average over all monte carlo runs of the evolution of FEI savings rate expenditure, PSM redemption fees, protocol revenue, and the KPI of interest, protocol profit.
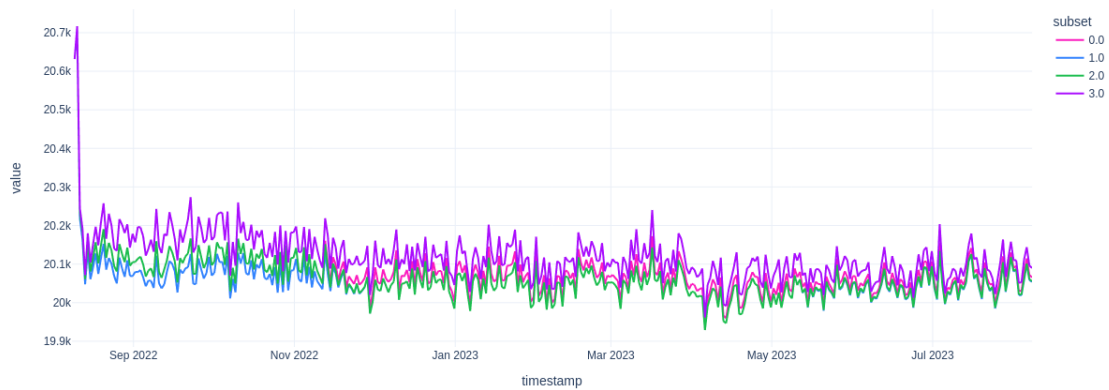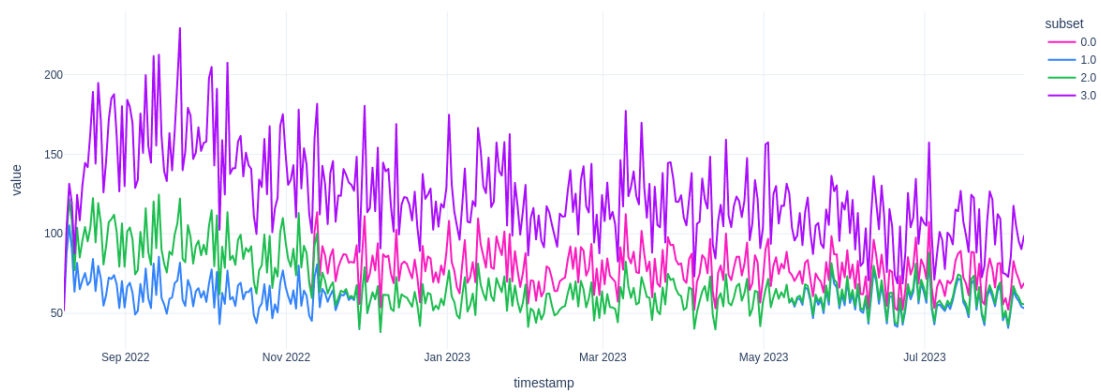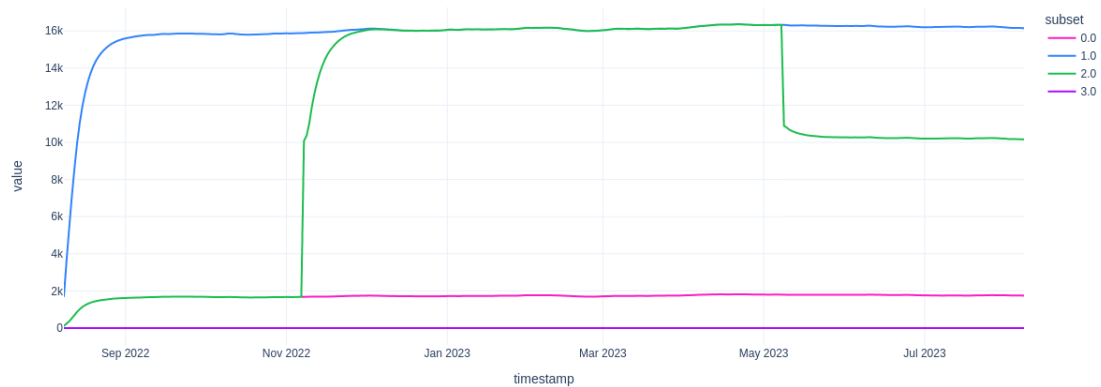
8.0.1 Protocol Profit
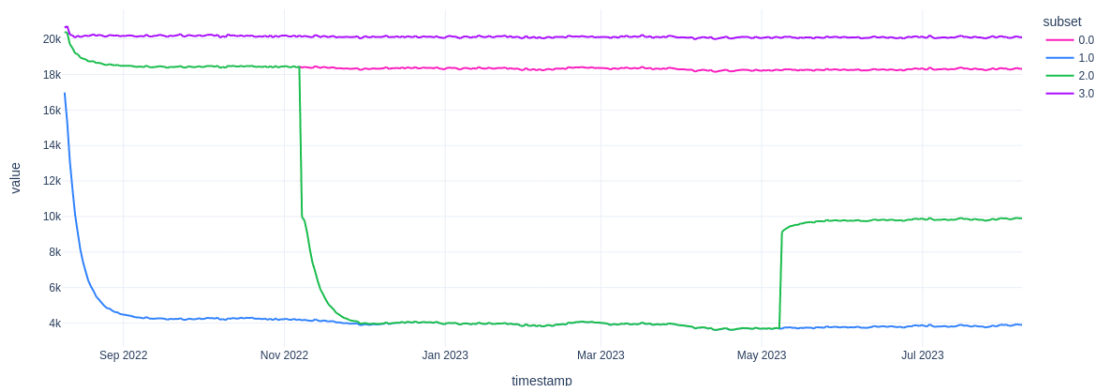

```
Protocol profit has a 100.0 % probability of first attaining a budget deficit by
time: 2022-10-01T12 , for subset 0
Protocol profit has a 100.0 % probability of first attaining a budget deficit by
time: 2022-10-01T12 , for subset 1
Protocol profit has a 100.0 % probability of first attaining a budget deficit by
time: 2022-10-01T12 , for subset 2
Protocol profit has a 100.0 % probability of first attaining a budget deficit by
time: 2022-10-01T12 , for subset 3
```

Above, we compute the empirical probability that the profit is negative within 3 months of the start of the simulation. In the original sweep of savings rates, and conditional on the PCV yield and redemption fees being at their current value, the protocol can maintain each level of savings rate throughout the simulation.

8.0.2 Synthetic Protocol Profit

We can look at 'synthetic' protocol profit and probability of budget deficit by setting higher levels of the FEI savings rate for realized values of protocol revenue.

```
2022-08-08 16:13:26,732 - root - INFO - Running experiment
2022-08-08 16:13:26,949 - root - INFO - Setting up initial state
2022-08-08 16:13:26,955 - root - INFO - Setting up initial state
2022-08-08 16:13:26,958 - root - INFO - Setting up initial state
2022-08-08 16:13:27,004 - root - INFO - Starting simulation 0 / run 0 / subset 0
2022-08-08 16:13:27,040 - root - INFO - Starting simulation 0 / run 0 / subset 2
2022-08-08 16:13:27,026 - root - INFO - Starting simulation 0 / run 0 / subset 1
2022-08-08 16:13:29,966 - root - INFO - Experiment complete in 3.233637809753418
seconds
2022-08-08 16:13:29,966 - root - INFO - Post-processing results
2022-08-08 16:13:31,718 - root - INFO - Post-processing complete in
1.7519469261169434 seconds
```
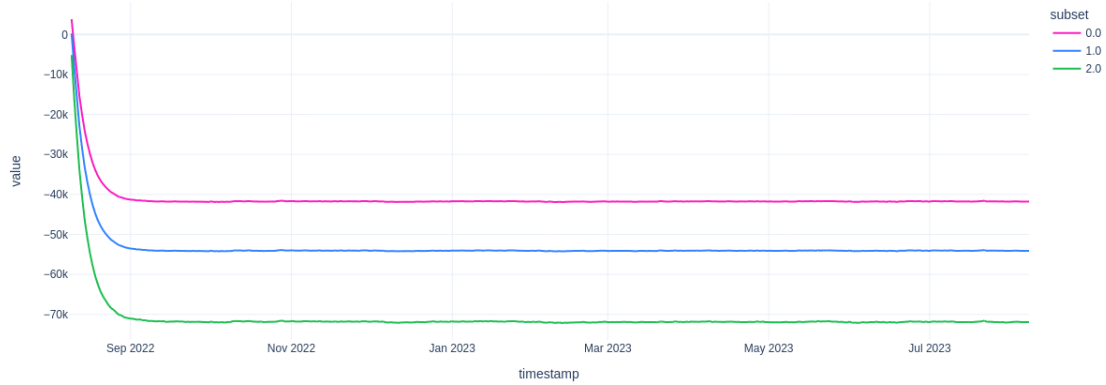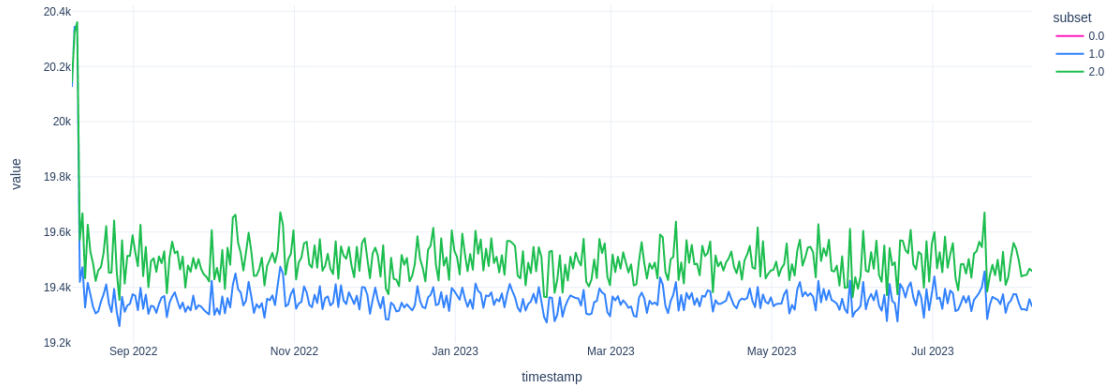
```
Protocol profit has a 0.0 % probability of first attaining a budget deficit by
time: 2022-08-07T12 , for subset 0
Protocol profit has a 0.0 % probability of first attaining a budget deficit by
time: 2022-08-07T12 , for subset 1
Protocol profit has a 0.0 % probability of first attaining a budget deficit by
time: 2022-08-07T12 , for subset 2

This state variable has a 0.0 % probability of reaching a value of 50000 , for
subset 0
This state variable has a 100.0 % probability of reaching a value of 50000 , for
subset 1
This state variable has a 100.0 % probability of reaching a value of 50000 , for
subset 2
```

Conclusion Protocol revenue and expenditure in practice are dependent on more complex dynamics that what the radCAD ecosystem model implements at its current level of abstraction.

However, this simple experiment confirms the intuition that a constant FEI savings rate process in the order of 10-15% APY is not sustainable in the market conditions the simulation puts forth.